Local Clusters in Global Value Chains

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A case study of wood furniture clusters in Central Java (Indonesia)

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VRIJE UNIVERSITEIT

Local Clusters in Global Value Chains

A case study of wood furniture clusters in Central Java (Indonesia)

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor aan
de Vrije Universiteit Amsterdam,
op gezag van de rector magnificus
prof.dr. L.M. Bouter,
in het openbaar te verdedigen
ten overstaan van de promotiecommissie
van de faculteit der Economische Wetenschappen en Bedrijfskunde
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De Boelelaan 1105

door

Roos Kities Andadari

geboren te Salatiga, Indonesië

promotoren:	prof.dr. P. Rietveld
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copromotor:	dr. H.L.F. de Groot

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Roos K. Andadari
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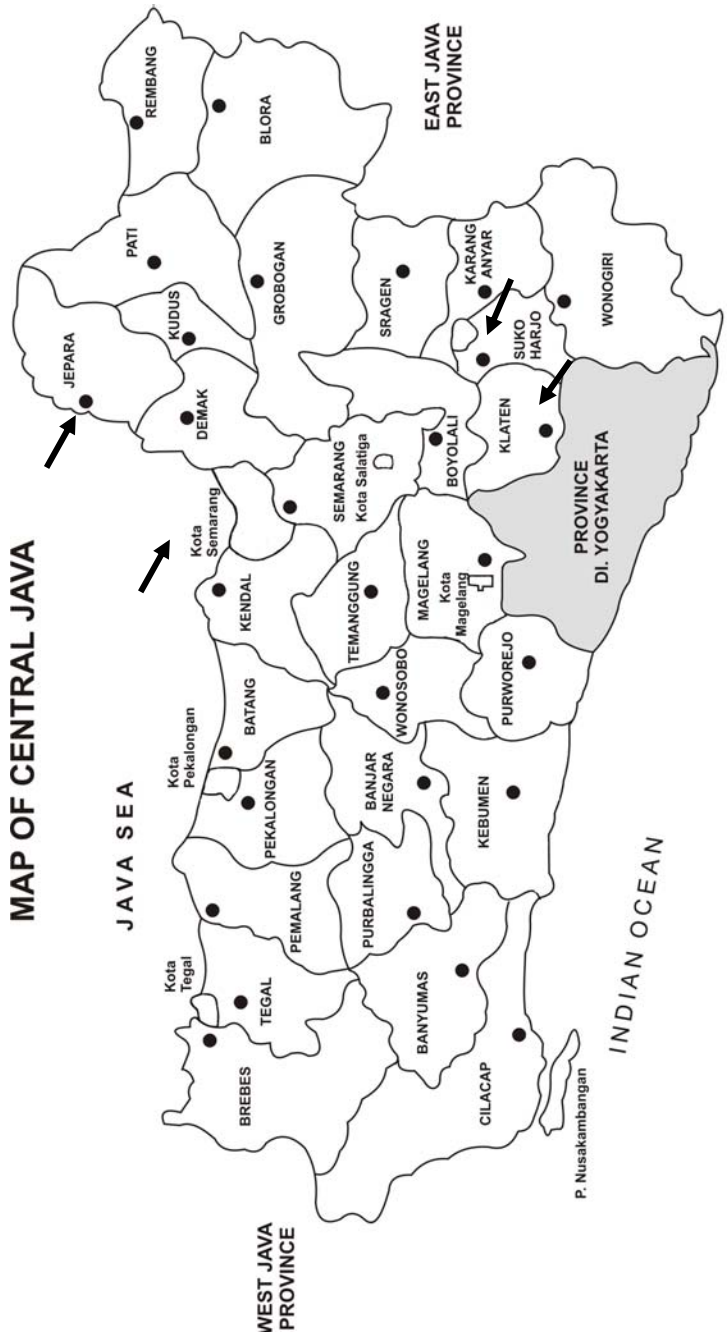

The clusters researched

Distance Jepara – Semarang City : 80 km

Klaten – Semarang City : 120 km

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Map of Indonesia

Map of Java

Chapter 1

Introduction

1.1 Setting the scene

In many developed countries, small and medium sized enterprises (SMEs) are important contributors to economic development as they generate economic growth and maintain social stability through job creation. However, their role in the national economy is different across countries, time periods and industries (Fischer and Nijkamp, 1988). In the USA, SMEs are currently considered as the foundation of the economy making indispensable contributions to the US economy in terms of job creation, innovation and entrepreneurship. Before the 1980s however, large firms dominated economic development while small firms only were considered to play a minor role in the economy apart from being suppliers to large firms.

Also in developing countries, SMEs are nowadays considered to be important drivers of economic growth. Small firms are moreover the primary source of labor absorption in cities, towns, and even in rural areas. With increasing population density in rural areas, most of the agricultural sector is no longer able to absorb new entrants into the labor force. The role of small firms for job creation is critical and will continue to play a crucial role in the future; however, many of these small firms are unable to grow since they are not competitive. Many of these firms provide unstable, poorly paid jobs, offer relatively poor working conditions, and give little training. Small firm productivity is often low; they make products with local inputs and technology, and are frequently only able to serve the local market. On the other hand, experience shows that entering the global market provides high potential for small firms to grow. The export market offers a good route for continued expansion and rapid accumulation. Moreover, the global market also provides a stimulus to upgrade production (Cawthorne, 1995).

Although globalization has increased the magnitude of world trade, many developing countries remain excluded from the world economy and are missing substantial benefits that globalization could bring (ILO, 2001). It is true that globalization offers small firms in developing countries opportunities to increase involvement, but coincident obstacles also hinder this. It is undeniable that internal firm factors are an important source of firms' competitive advantages that enhance firm performance. However, there is no consensus among scholars regarding the sources of competitive advantages of these firms. Contractor et al. (2003) argue that the competitive advantages of firms can be derived from the entrepreneurial and firm-level characteristics, whereas Wang and Ang (2004) stress that competitive advantages derive more from (amongst other things) resource-based capabilities and strategies. Mabey and Gooderham (2005) emphasize the role of management development, while Carlson et al. (2006) argue that competitive advantages are sourced from human resource practices. Bretherton and Chaston (2005) accentuate access to adequate resources, while Ibeh (2003) emphasizes decision-makers' experience, international contacts and orientation, firm-specific competencies, the adoption of innovative technologies, the search for foreign market information, and the management of channel relationships.

Some scholars underline that firm size does not influence firm performance or prevent their involvement in world market transactions (Moen, 1999; Bonaccorsi, 1992), the internal resources (financial, technological, and personnel) owned by small firms limit them in dealing with international activities. With respect to internal finances, several studies show that the relationship between internal financing constraints and growth rates are by and large independent of size (Carpenter and Petersen, 2002). The availability of internal finances may matter for innovation races and technological alliances (Lerner and Merges, 1998), or constrain firms to invest in physical capital and R&D (Scellato, 2007). Evidence from most developing countries reveals that the lack of internal resources is the main barrier to the internationalization of small firms (Shaw and Darroch, 2004; Ahmed et al., 2004).

Industrial cluster scholars argue that clustering may help local firms overcome their growth constraints in order to compete in distant markets (Giuliani et al., 2005). A cluster improves small firms' competitive advantages so that they are able to compete with fully integrated firms in the international market. By clustering, firm performance is enhanced, as firms attain benefits from agglomeration economies (Marshall, 1920; O'Sullivan, 2003), including opportunities to utilize innovations in their products and processes (Porter,

1998). In a cluster, firms also have opportunities to cooperate that may compel them to confront the fast pace of market demand (Schmitz, 1999). Clustering may also reduce the production and marketing costs for individual enterprises (Schmitz, 1992; Weijland, 1994) to the extent that they can be able to compete in world markets. In other words, clustering helps small firms improve their competitive advantages, since it helps in overcoming the constraints from diseconomies of scale.

Studies on global value chains (Gereffi, 1999; Bair and Gereffi, 2001) also provide evidence showing that many small firms from developing countries have become successful exporters not only because they are supported by strong subcontracting relationships to suppliers, but they also have good relationships with foreign investors or buyers (Berry et al., 2002). Working in a cluster facilitates small firms to respond positively to changes in global competition; however, having a link to global buyers is necessary to access international markets, particularly to developed world markets where most global buyers operate. By linking to global buyers, firms from developing countries gain access to upgrading thus allowing small firms to improve their own production processes and products. As a result they can overcome the barriers that hinder their entry into foreign markets.

So far, many studies reveal the existence of successful clusters in which international buyers are present, but the ultimate factors instigating improvements in firm competitive advantages are not yet fully clear. Box 1 contains two examples of relatively well-developed clusters that provide detailed insights into cluster dynamics: the Tiruppur cluster in India, and the Torreon cluster in Mexico.

Box 1.1 The case of the Tiruppur cluster in India and the Torreon cluster in Mexico.

Tiruppur in India and Torreon in Mexico are examples of successful clusters. The progress in several indicators of the Tiruppur cluster from 1960-1985 and the Torreon cluster from 1993-2000 demonstrate how firms in a cluster benefited from the cluster and relationships with foreign buyers. Such a relationship allowed them to compete in the international market, which finally resulted in their own expansion. The development of these clusters can be seen in Tables 1.1 and 1.2.

Table 1.1 Expansion indicators of the knitting industry in Tiruppur, 1960 – 1985

	1960	1970	1975	1980	1981	1985
Number of firms (units)						
- Small scale firms (estimated)	200	500	500	1,200	1,200	1,500
- Small scale firms recorded by DIC	57	227	n.a	1,093	1,327	1,915
- Factories	n.a	n.a	n.a	n.a	n.a	254
Total annual turnover (estimated) in million rupee	100	200	400	600	1,000	2,500
Employment (persons)						
- Small scale firms (estimated)	3,000	7,000	7,000	20,000	30,000	40,000
- Small scale firms recorded by DIC	n.a	n.a	n.a	n.a	9,497	11,073
- Factories	n.a	n.a	n.a	n.a	n.a	2,487

Adapted from: Cawthorne (1995) p. 44.
Note: DIC is a local investment board.

The Tiruppur cluster is a knitting industry located in the South Indian state of Tamil Nadu. Since the 1980s, the export market has enlarged. Tiruppur began to expand in 1960 from a small cluster comprising about 200 small scale firms with an annual turnover of approximately 100 million rupee, and employing about 3,000 workers. Twenty-five years later it had expanded in the number of firms by more than a factor 7, and in employment by more than a factor 10; whereas the total annual turnover increased by a factor 25. Besides providing more jobs, upgrading was also found in the cluster firms as shown by the technological enhancements applied, the quality improvement of the products, and the increase in product differentiation.

Table 1.2 Apparel industry indicators from Torreon/La Laguna, 1993 – 2000

	1993	1998	2000
Total output (garments per week)	500,000	4.0 million	6.0 million
Output per company (garments per week)	Maximum 50,000	Maximum 230,000	Maximum 480,000
Mexican denim export from total production	1-2%	5%	15%
Assembly price per piece	US$0.90-1.10	US$1.20-2.05	US$1.60-3.00
Employment	12,000	65,000	75,000

Adapted from: Bair and Gereffi (2001) p. 1889.

The Torreon Cluster in Mexico specializes in denim blue jeans and exports a major percentage of its products to the U.S.A. The cluster employed about 12,000 workers in 1993 with a total output of 500,000 garments per week, and exported about 1-2% of its production. Within 10 years the cluster increased employment by more than six-fold, total output increased more than twelve-fold, and exports increased more than seven-fold. The capabilities of the industry have increased over time. In 1993 it had only engaged in assembly activities, but by 1996 in addition to assembling, it also performed activities related to textiles, trim and labels, laundry, and finishing. The cluster has since 2000 been able to produce a full range of products.

Comparing the two examples in Box 1.1, we can observe that, although both successful clusters are export-oriented clusters in which the change in the role of foreign buyers is rather substantial, both authors take different approaches in examining cluster success that affects the important factors highlighted in cluster performance. In the Tiruppur case, Cawthorne (1995) stresses that clustering and an intensive inter-firm network are important factors contributing to performance, besides being linked to foreign buyers. Bair and Gereffi (2001) emphasize the linkage to global value chains and the network in the cluster as essential contributors to cluster performance. The experience of the two clusters mentioned above shows that cluster factors and international linkage factors are influential in the determination of cluster performance.

Nevertheless, a cluster's access to international markets does not guarantee its success. The declining cluster performance of steel construction in the Ruhr area (Germany) and the cotton industrial cluster in Lancashire (Britain) are illustrative examples. The Ruhr industrial cluster was regarded as a success during the 1950s, and was described as having the ideal characteristics of an industrial district, including high specialization, an effectively developed infrastructure of supplier firms, an availability of specific services, personal communication and an exchange of ideas, and a process of mutual training and learning by doing. In other words, the ideal atmosphere described by Marshall focusing on labor pooling, sharing common inputs and knowledge spillovers was found in this cluster. In fact, by the end of the 1970s, previously thriving steel construction firms were closed down; there was a radical drop in production and a mass dismissal of workers. In the mid 1980s, the Ruhr cluster lost over 100,000 jobs in the industry. The decline in the Ruhr cluster was precipitated not only by a dramatic decrease in demand, but also by cluster-related factors (Grabher, 1993).

Another noteworthy example is the Lancashire cotton industry in Britain, a successful cluster in 1830 and part of a highly sophisticated local economy, consisting of yarn and cloth manufacturers and machine making, specialist merchants, and middlemen. The cluster developed in the 19th century during the industrial revolution and its exports grew. It was characterized by high vertical cooperation due to high specialization and an agglomeration of interrelated firms. Prior to World War I, it had employed 600,000 workers in spinning and weaving products and produced 8,050 million yards of cloth. But the cluster declined in the mid-20th century, and by the 1980s, was producing only 327 million yards of cloth with the help of 76,000 workers. Changes in the international market

and the collapse of the Indian market caused a decline in R&D investments, until Lancashire products were finally to become uncompetitive (Parsons and Rose, 2005).

In the next section, we discuss wood furniture production in Central Java, a sector dominated by small firms which play a key role in the local economy, and are the focus of this study.

1.2 Wood furniture clusters in Central Java

The wood furniture sector in Central Java, Indonesia is dominated by small firms with the tendency to operate in clusters. These clusters have grown and can be considered as successful since they link to international markets. However, furniture clusters have experienced decline in the last few years. Because small firms have crucial positions in developing countries, especially in Central Java, their long-term viability is important. Therefore, in order to bolster the sector the continued reinforcement of any possible advantages of small firms is necessary. To investigate the determinants of the long-term viability of small firms an integrated framework will be developed and tested. This study will concentrate on the Central Java wood furniture clusters.

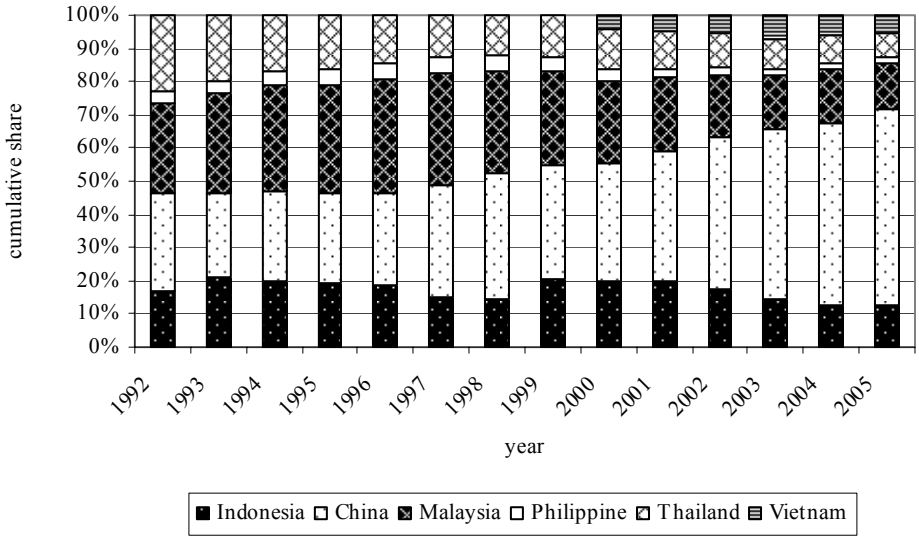
Wooden furniture is a traditional product with a low technology involvement, but it is one among several of the largest traded goods in the world. In 2005, its world trade value reached US$30 billion, and the growth of the wood furniture world trade from 1990 to 2000 is 100% (UN, 2007), exceeding that of total world trade, which stood at 27% (Ratnasingam and Ioras, 2005). However, between 2000 and 2005, the wood furniture industry as a whole grew by 50%. Although this sector is considered as a resource-based[1] and labor - intensive industry, many developed countries are among the top 15 exporters, including Italy, Germany, Canada, Denmark, France, Spain, and the U.S.A. Wood furniture is considered as a durable and non-essential product, which is sold on a perceived rather than actual value. Consequently, demand is strongly affected by economic fluctuations: an economic downturn will substantially influence demand and purchases will be delayed. The difference between the industry from developed countries and that of developing, particularly Asian countries, is that developed countries rely on productivity, whereas Asian countries rely on incremental capital inputs (Ratnasingam and Ioras, 2005). Within Asian countries, China, Malaysia, Indonesia, Thailand, and the Philippines are the

[1] A resource-based industry is an industry that utilizes natural resources as materials, such as forest products.

leading wood furniture exporters. However, in recent years Vietnam has emerged as a strong exporter with magnificent growth in its exports.

Competition in the world market for wood furniture has increased, as can be seen by the higher number of countries, especially developing, involved in world trade. In 1990, only 59 countries participated as wood furniture exporters, increasing to 107 in 1995, and 151 in 2000, but declined in 2005 to 122 countries. Ratnasingam and Ioras (2005) show that competition among Asian countries is very severe due to minimum product differentiation among these countries. Price therefore becomes the weapon for firms to compete, and price tends to decrease over the years. According to Kaplinsky and Readman (2002), this trend occurs in most of the products sold by most developing countries. Buyers also changed their behavior, as most tend to engage in bargain hunting, especially when they attend wood furniture exhibitions. The export performance of these Asian countries is compared in Figure 1.1.

Figure 1.1 Development of countries' share in Asian wood furniture exports



Source: The United Nations Statistics Division (2006).
Note: Data for Vietnam available only from 2000-2003; whereas for 2004-2005 we assume the export is equal to export in 2003. Since export data for Indonesia for 1998 is not available, we assume the Indonesian furniture export for 1998 to be equal to export in 1997.

The pessimism regarding the future of the Central Java wood furniture clusters was illustrated clearly in the research findings of ILO (Posthuma, 2003) which found that, compared to some other Asian countries (China, Malaysia, the Philippines, Thailand, and Vietnam), Indonesian products are less competitive in quality, delivery, price, promotion, and relationships. In only one aspect, design, Indonesian products are relatively advanced.

In the global market, competition among developing countries' products generally exploits each country's comparative advantage, an advantage that relies on abundant resources of raw materials and unskilled labor. Meanwhile, in Central Java costs have increased, and the industry is facing a shortage in raw materials.

In Indonesia, 14 out of 33 provinces produce wood furniture products. The role of Central Java is essential as it contributes 26.5% of national production and about 27.8% of the employment in the wood furniture industry, and 37.0% of large and medium (L&M) firms (BPS, 2004). Compared to two of the other largest wood producers, West Java and East Java, the size of firms in Central Java is relatively small; most firms are considered to be medium-sized. Compared to L&M scale firms, small scale firms provide more employment.

Table 1.3 describes exports in Central Java. Although fluctuating somewhat, the share of wood furniture exports in total exports is fairly constant and highly substantial (25-30%).

Table 1.3 The development of Central Java non-oil exports from 1999 – 2004 (in millions of US$)

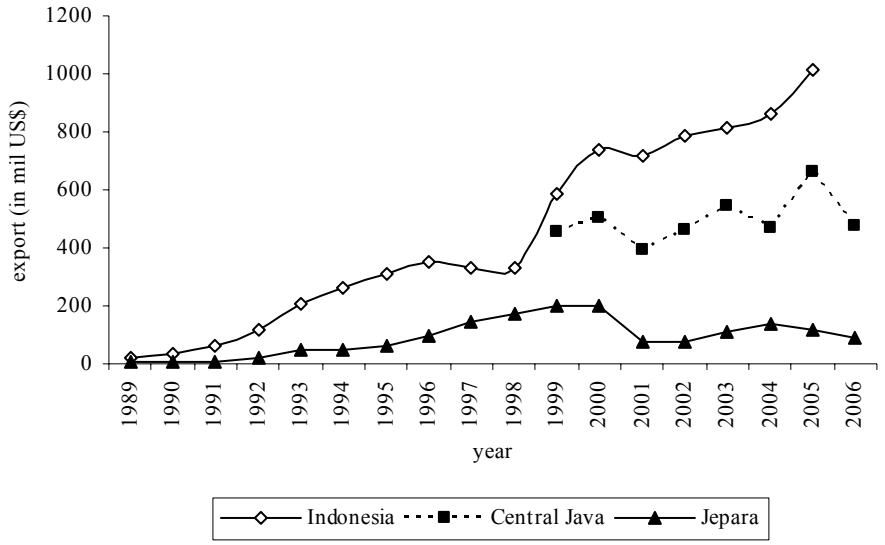
		1999	2000	2001	2002	2003	2004	2005	2006
1	Wood furniture	453.7 (27.3%)	503.8 (27.2%)	393.0 (22.8%)	464.6 (27.2%)	544.0 (31.9%)	466.8 (25.4%)	664.8 (27.7%)	476.0 (n.a)
2	Garments	191.7	246.1	224.1	147.9	249.5	225.1	(n.a)	(n.a)
3	Thread	191.0	246.3	205.5	117.3	67.0	187.0	(n.a)	(n.a)
4	Textiles	214.1	237.4	185.9	106.9	93.3	137.4	(n.a)	(n.a)
5	Processed wood	90.7	107.7	94.9	96.3	120.4	92.0	(n.a)	(n.a)
6	Total Exports	1,665.3	1,854.7	1,725.7	1,705.6	1,708.1	1,840.0	2398.1	(n.a)

Source: The Central Java Industrial and Trade Office (2007).
Notes: Total Exports consist of about more than 20 products, while this table only presents the 5 largest products that contribute to the Total Exports.

Jepara is one among several wood furniture clusters in Indonesia. It is the center of wood furniture producers. There are a large number of firms found in this cluster that provide a large amount of employment. Compared to other clusters, the Jepara cluster is the most advanced.

Figure 1.2 shows the shares of Central Java and Jepara total wood furniture exports in Indonesia. Starting with a dominant position in the late 1980s, the shares of Central Java wood furniture exports is tending towards decline. This holds even stronger for Jepara.

Figure 1.2 Wood furniture exports from Jepara, Central Java, and Indonesia



Source: The United Nations Statistic Division (2007) and the Central Java and Jepara Trade Office (2007).
Note: The three data indicators are at nominal prices; since data for Indonesia for 1998 is not available, we assume the export is equal to that of 1997.

The main wood furniture clusters in Central Java are Jepara, Klaten, Sukoharjo, and Semarang City. As it is mentioned above, the Jepara cluster has a special position in Central Java because of its historical background, large number of employees and its exports. Jepara is well-known and compared to the other clusters, Jepara differs because it is dominated by small firms. Over 6,000 large, medium, and small-scale firms are involved in wood furniture production, of which the majority of output is exported. Jepara developed from a rural traditional cluster and began to grow rapidly when it was opened to foreign buyers. Because rapid growth was reached within a very short period, this changed the cluster from static to dynamic. Since 1988 its products have penetrated the international market; and for more than 15 years, the Jepara cluster benefited from the increase in foreign buyers' orders. The Jepara cluster experienced growth during the Indonesian financial crisis from 1997 to 1998 that precipitated a boom in international demand. Meanwhile, the Semarang cluster (in an urban area) is dominated by L&M firms, while the Klaten cluster is rural with fewer L&M firms as well as small scale firms (compared to Jepara). Sukoharjo is a relatively new rural cluster with fewer L&M firms and small scale firms. Firms in the Jepara cluster also supply to many other exporting firms from other clusters. This shows that there is a link between clusters, and Jepara has a central position among these clusters.

The relative position of Jepara in Central Java province can be seen in its contribution to employment (Table 1.4).

Table 1.4 Characteristics of the Jepara district compared to Central Java in 2002

Firm Scale	Area	Number of firms	Exporters	Foreign share firms	Employees	Production value (bil rp)
Medium and large scale	Central Java	483	278	20	42,570	1,538.0
	Jepara	261	174	11	18,842	465.5
	Jepara share to Central Java	54%	62.6%	55%	44.3%	30.3%
Small scale	Central Java	8,955	44	n.a	54,568	706.6
	Jepara	6,471	9	n.a	39,027	547.7
	Jepara share to Central Java	72.3%	20.5%		71.5%	77.5%
Total	Central Java	9,438	322	n.a	97,138	2,244.7
	Jepara	6,732	183	n.a	57,869	1,013.2
	Jepara share to Central Java	71.3%	56.8%		59.6%	45.1%

Source: BPS (2003).
Note: bil rp is billions of rupiah.

Table 1.4 shows that more than 70% of the furniture firms are found in Jepara, and that these firms contribute nearly 60% of the employment in Central Java's furniture industry. Furniture production of Central Java is primarily in Jepara, and the majority of wood furniture products in Indonesia are produced in Central Java. Therefore, the wood furniture industry in Central Java as well as the Jepara cluster are important players in the Indonesian economy.

1.3 Research questions

The main aim of this research is to investigate the factors that contribute to the performance of small firms in wood furniture sectors in developing countries. This will be done by using theoretical insights about firm innovation, cluster external economies, and global value chains. The present study will address the following research questions:

What factors contribute to firm performance in small and medium scale enterprises in the wood furniture sector in Central Java? In particular, what is the contribution of: (1) Internal firm factors, (2) Cluster externalities, and (3) International linkages to firm performance in the Central Java wood furniture clusters?

Considering the fact that small firms, particularly from developing countries, have inherent limitations that hinder them from competing in foreign markets, the relevance of

clustering is suggested by the cluster theory. The experiences of Third Italy, Baden Wurttemberg, West Jutland, and South West Flanders from developed country clusters (Schmitz and Musyck, 1993) and Sinos Valley (Schmitz, 1999), Sialkot (Nadvi, 1999), and Guadalajara (Rabellotti, 1999) provide evidence about how clustering helped small firms overcome export barriers, and ultimately increase their performance. The ability of firms in a cluster to respond to changes in the international market depends on the dynamics, such as an ability to transform itself, an ability to cooperate to face changes, and an ability to solve common problems. All of these dynamic factors will affect the advantages offered by a cluster that determine firm performance. Particularly, firm internal factors such as the characteristics of entrepreneurs and managers influence how producers perceive the changes and how they respond to them. In addition, the strategies selected and applied will also determine firm performance. The first and second research question intends to address the contributions of these factors.

Transformation may take place in a cluster but the dynamics of the international market may cause export barriers to change; they can weaken or strengthen over time, causing changes in the accessibility of products produced by firms in a cluster for the international market. One of the main shortcomings of cluster theory is that it concentrates on the roles played by various local stakeholders, while tending to underestimate the role played by external linkages in the cluster development processes (Visser, 1996; Sandee, 1995). In export clusters, foreign buyers are important: not only do they purchase products, but they also provide many types of assistance such as credits, training, design advice, and so on. Through cooperation and various assistance, foreign buyers affect the development of clusters by participating in upgrading processes (Gerrefi, 1999). Linking to global buyers is a good way to enhance foreign market accessibility that will subsequently increase performance. The effect of having an international linkage to firm performance is what the third question aims to investigate.

This thesis bridges a theoretical and development problem; it attempts to add to the gap in knowledge about small firm clusters in developing countries. In particular, it studies if and how the spatial clustering and linking to global buyers improves the performance of firms in wood furniture clusters in Central Java, Indonesia. Previous studies were not fully able to empirically demonstrate the contributions of cluster externalities, the international network, and internal firm factors in determining firm performance. This study is important because apart from integrating the cluster theory, global value chain approach, and internal

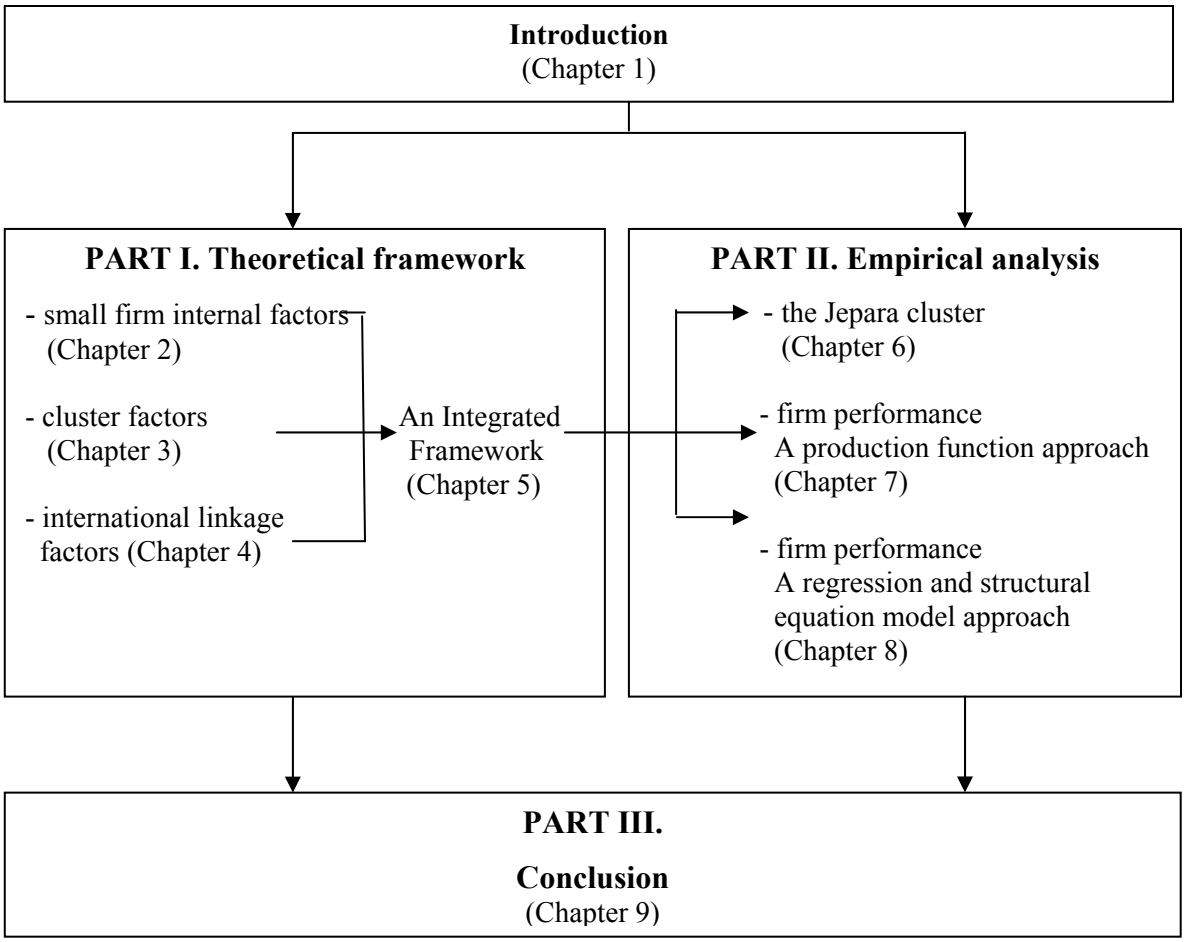
firm factors into one framework, it also presents their relative impact on firms in different industrial clusters.

The focus of this is on wood furniture clusters in Central Java, Indonesia, and also on firms in different clusters and compares those clusters using Jepara cluster firms as the benchmark. As indicated in page 9 and 10, the Jepara cluster is described in detail in order to provide background about how the firms in the cluster have developed over time. Besides having access to the available data, Central Java warrants explicit attention with regards to several development-related issues. First, Central Java is one of the largest contributors to the wood furniture industry in Indonesia, but it is different from other provinces because the industry is dominated by small firms. Wood furniture has an important role in job creation and income generation. Second, the furniture industry in Indonesia, specifically in Central Java, is a buyer-driven chain, in which global buyers have a strong role in determining the access of local firms to the international market. Third, Central Java has various types of clusters in which the impact of the identified determinant factors can be compared. Fourth, the wood furniture industry is a resource-based intensive industry, in which its sustainability depends on how wood resources are managed.

1.4 Outline of the thesis

The organization of this thesis is described in Figure 1.3 and consists of three parts. Part I covers the theoretical background for analyzing the firms in the clusters. Part II contains an empirical analysis of the wood furniture firms in Central Java that are either clustered or isolated, and the firms in the prominent wood furniture clusters. In this part, the Jepara cluster is also described. Part III summarizes the findings and considers theoretical and policy implications. It also covers possibilities for further research.

Figure 1.3 Research outline



Part I (Chapters 2 to 5) provides a theoretical framework and describes and discusses the relevant theories to determine the firm performance. Chapter 2 describes the way firms in general and small scale firms in particular can compete based on their internal firm resources. Chapter 3 focuses on the importance of clustering for small scale firms as a vehicle for improving their performance. Besides examining the different views of the sources of advantages from a cluster, this chapter explores experiences of clusters from developing countries. This chapter also discusses the strategies clusters use to maintain growth, and the trajectories of an industrial cluster. Chapter 4 stresses the importance of the international network as a way for small firms in developing countries to overcome the limitations of cluster factors. As many small firms in developing countries face barriers to entry in foreign markets, linking to global chains is one way to overcome barriers. The three theories are presented in one integrated framework in Chapter 5. Several hypotheses are raised based on the literature review and are subsequently presented and tested in Chapters 7 and 8.

Part II (Chapters 6 to 8) contains the empirical analysis. Chapter 6 describes the development of the Jepara cluster over time. The historical background is provided and a number of development indicators are presented. Apart from discussions about the causes of the export dynamics after the cluster was opened to the international market, this chapter also explores the trajectories in which the Jepara cluster has transformed. Chapter 7 uses the production function approach to estimate the impact of location externalities[2] and international linkages on performance. This chapter examines the performance of the firms in all areas in Central Java. The assessment of the firms' performance is based on all large and medium firms in Central Java surveyed by BPS from 1994 to 2003. Chapter 8 explores the extent to which the cluster factors, international linkage factors, and internal firm factors determine firm performance. Using detailed indicators, this chapter compares the performance of the Jepara firms to three other wood furniture clusters, and also investigates the difference in performance between Jepara L&M firms compared to small scale firms. The analysis is based on a micro survey collected by the author. The impacts of those three groups of factors on the firm performance are analyzed using a regression analysis, whereas the simultaneous effects are tested using a structural equation model.

The thesis ends with Chapter 9, where the main conclusions of this research, as well as its major policy implications, are summarized. Suggestions for further research are proposed in the final section.

[2] external economies/diseconomies that are derived from a geographical location of economic activity.

PART I

Theoretical Background

Chapter 2

Small Firms

2.1 Introduction

As mentioned in Chapter 1, small firms have been important in the successful development of many Asian economies (Berry and Mazundar, 1991). Due to their critical role in the economy, the expansion of small firms is favored by many governments. Scholars also regard small firms as one of the best vehicles to help developing countries participate in the global economy. However, small firms face limitations that hinder their development, but it is also true that small firms have advantages in terms of flexibility that affect their behavior.

This chapter discusses a number of views on the development of small firms and structured as follows. Section 2.2 provides an overview of some economic theories about firm size. Section 2.3 describes the characteristics of small firms. Section 2.4 focuses on scale economies, followed by a discussion of flexibility in Section 2.5. Small firm competitiveness is dealt with in Section 2.6, and Section 2.7 describes small firm innovation. Section 2.8 concludes.

2.2 Firm size in economic theory

Economic theories reveal much about the importance of firm size. In his study, You (1995) codified the discussion in economic literature on small firms into four approaches that are different and explain different complementary aspects of the firm.

(1) Conventional microeconomic approach or the technological approach

In the micro economic approach, firm size is explained by an efficient allocation of given resources, under a given technology. Technology applied in a firm determines economies of scale (and scope). The analysis of firm size focuses on the manufacturing sector here and is conducted in the context of a competitive equilibrium. In manufacturing the increasing returns to scale is generated from the large indivisibilities of machines and other special inputs. When the number and the size of indivisibilities increase, the minimum efficient scale will also increase. However, an efficient firm size is explained not only by production technology but also by the effectiveness of organizational technology. Moreover, to exploit the technological economies of scale requires capital. In this sense, small firms have an advantage besides the diseconomies of scale.

(2) Transaction cost approach or the institutional approach

In the transaction cost approach, a firm's size is determined by transaction cost efficiency. Coase (1937) uses an equilibrium analysis to define the dividing line between firms and the market. In the transaction cost theory, a firm is viewed as an alternative to the market to allocate resources and to structure and govern transactions. This approach takes the view that all transactions involve costs, so to minimize transaction costs different types of governance are required for different types of transactions. Transactions for which the market is a highly costly form of governance are internalized.

Firms are of an efficient size when the marginal intra-firm transaction costs equal the marginal inter-firm transaction costs. The first is due to internalization activities, and the second results from inter-firm cooperation. From the transaction cost theory, the optimal size of the firm is strongly determined by the extent of asset specificity, whereas from the governance cost side, the efficient firm size increases when organizational innovation reduces bureaucratic costs. Inter-firm cooperation provides an alternative to integration. The growth of inter-firm cooperation depends on the degree of asset specificity and the frequency of the inter-firm transactions. When inter-firm cooperation is extensive, more small firms will not increase in size.

(3) Industrial organization approach

In the industrial organization approach, firm size and distribution is determined by market power and the size distribution of firms that results from imperfect competition. There is no presumption that firm size or its distribution is efficient or in the process of adjustment

toward an efficient equilibrium. In this approach, small firms have no specific place. The discussion on small firms appears in the variation of the theory such as the price leadership model. In the competitive fringe model, small firms on the fringe are price takers. The exercise of market power by large firms allows relatively inefficient small firms to survive. In this position, small firms function as a buffer to the cyclical fluctuation of industry demand, and the dominant firms moderate the burden of excess capacity during recessions. Meanwhile, in the heterogeneous cost model, the cost differential between large and small firms determines the shares of small firms. Cost differentials between small and large firms may originate from the differential price factors that small firms face. In this context, the important advantage of small firms is their flexibility in terms of technology and organization. Small firms have a high degree of responsiveness to changing demand; they have superior ability to cater to the special needs of customers in terms of orders and after sales service.

(4) The dynamic models

Several models can be found in the group of dynamic models, but this section will discuss the innovative firms from the evolutionary model. In order to maintain their competitive position, firms must continuously initiate technological and organizational changes to adapt to new opportunities. Schumpeter (1934) refers to this ability as innovation, which is important as a driving force of economic growth. Schumpeter argues the critical role of entrepreneurs in devising innovations for firms, as innovation contributes to an increase in productivity. The concept of innovation from Schumpeter is very broad and covers the following aspects: a new combination of factors leading to the production of a new product; the implementation of a new method of production; the creation of a new market; the reorganization of new raw materials or intermediate supply chains; and the reorganization of the industry. Schumpeter's idea does not specifically discuss firm size, but he argues that innovation requires an attractive condition: extra normal (monopoly) profit. In order to have monopoly power, firms need to be large.

2.3 Small firm characteristics

A small business is not a little big business, so it needs a different management approach (Welsh and White, 1981). Several characteristics of small firms reflect the advantages and disadvantages that distinguish small businesses from large firms. This section describes SMEs and identifies characteristics inherent to small firms.

Small and Medium Enterprises (SMEs) embody small-sized firms and medium-sized firms. There are many measurements used to define SMEs, but most are applied to the number of employees and sales turnover. Literature shows that countries define SMEs differently; the type of industry also affects how a small firm is defined. For instance, the American Small Business Association defines a small manufacturing company as a firm with 500 or fewer employees, whereas retail companies are defined as small if they have $6 million or less in terms of annual revenues (Paton, 2005). In contrast, the European Union defines SMEs as firms with fewer than 250 employees, and distinguishes small firms as having fewer than 50 (Holmes and Gibson, 2001). Meanwhile, developing countries' definitions also vary. In economic transitional countries, each country has its own definition; Albania, for instance, defines small enterprises as having from 10 to 49 employees, and medium-sized enterprises as having 50-250 employees. Slovakia considers small enterprises as having 10-24 employees, and medium-sized enterprises as having 25 to 500 employees (Szabo, 1998). The Indonesian Department of Industry defines small firms as having 5 to 19 employees, and medium-sized firms as having 20 to 99 employees.

Given the various definitions above, there does not seem to be any standard worldwide definition of SMEs. Most publications use the definition loosely, and many use the terms "SMEs" and "small firms" interchangeably. Small firms have special characteristics:

(1) The firms are restricted in terms of assets, annual turnover, and number of employees (Pudlats, 2005). They are small-scaled, personal, and independent (Wincent, 2006; Nooteboom, 1994). Therefore, the firms are constrained in resources, in terms of finances and human resources.

(2) A small firm is characterized as having a strong linkage between the enterprise and the owner (Pudlats, 2005). Frequently, the owner is also the manager of the company, who determines the firm objectives and policies, and actively works at the operational level. Apart from time restrictions as one of the most critical issues, management activities also tend to be improvised and intuitive. The role of the owner is dominant, since the ambitions or personal desires of the owner may influence whether a firm remains small or enlarges (Scott and Bruce, 1987).

(3) The organizational form is heterogeneous (Reis, 1999), has a high diversity (Wincent, 2006; Nooteboom, 1994), and varied management styles (Churchill and Lewis, 1983).

(4) Leadership structure tends to be limited. Managers tend to focus on short-term results and often overlook future oriented planning activities (Stechmann, 1996). The strategic

decision-making tools are not used regularly but rather only when certain threats arise (Frizele, 2001).

(5) Small firms have limited investment capabilities, resources, and legitimacy. This may affect their dynamics. The limited resources, financial and non-financial, also affect the lack of information acquisition for strategic use (Glasmeier et al., 1998).

(6) Small firms face a lack of functional expertise, concentration of risks, shortage of information in identifying market opportunities, and diseconomies of scale (Van Gils, 2000).

(7) Small firms have a better-developed adaptability to market evolution because of their lean structure and the active involvement of their human resources. This characteristic is related to flexibility, customization, unique competence, and motivation.

Meanwhile, the life cycle perspective provides a more detailed description of the characteristics of small firms that constrain them. This perspective emphasizes that characteristics of small firms differ over time; it depends on the stage of growth. Many scholars propose different stages to characterize firm development (for example Churchill and Lewis,1983). Based on Greiner's (1972) framework, Churchill and Lewis (1983) applied the model to small-scale firms and proposed a growth model consisting of 5 phases: Existence, Survival, Success, Take-Off, and Resource Maturity. The dimensions considered in each stage are size, diversity, and complexity.

Each stage is also characterized by different management factors: managerial style, organizational structure, extent of a formal system, major strategies, and owner involvement in the business. Each stage has it own problem(s) that need(s) to be solved. The main problem in the existence stage is obtaining customers and delivering products. At the survival stage, the difficulty lies in the relationship between revenues and expenses. Meanwhile, a firm faces two possibilities in the success stage: disengagement or growth. At the success disengagement stage, professional staff is involved, which can be the last part of the development. The success growth stage is the other possibility, in which entrepreneurs organize all resources for growth. The main problem is how firms can reach rapid growth and finance it. At resource maturity, the system is extensive and well-developed. There are two possibilities: continued performance or ossification.

2.4 Economies of scale

The main disadvantage faced by small firms is diseconomies of scale, which stem from limited resources of the firms. This section describes these disadvantages that influence their competitiveness.

In the debate on the significance of firm size, Hofer (1975) underlines the important role of firm size in moderating the relationship between strategy and performance. From their empirical study, Smith et al. (1989) support this argument. However, the importance of size is viewed differently among scholars. Kelly and Amburgey (1991) highlight that firm size affects the probability of change in core features of the firm. Firm size affects R&D expenditures (Cohen and Klepper, 1996) and affects firm innovation (Acs and Audretsch, 1988; Hitt et al., 1990). For large firms, size gives advantages such as economies of scale, experience, brand name recognition, and market power (Hambrick et al., 1982; Woo and Cooper, 1992). Besides economies of scale and scope, Nooteboom (1994) identifies several advantages of large firms, such as they have more and cheaper financial resources, greater possibility for risk spreading, and a greater capacity for worker and equipment specialization.

In general, most of the advantages of large firms are disadvantages for small-scale firms. Small manufacturing firms face internal constraints due to diseconomies of scale. This disadvantage in scale (including the scope, sequence, and experience) is related to the availability of resources that potentially have negative impacts on the costs, quality, and marketing of their products. Below we describe the economies of scale and the related concepts.

Economies of scale. Economies of scale are a reduction in the long-run average unit cost resulting from an increase in output (Pratten, 1991). The main dimension of scale affects production and distribution of costs. The economies of scale can be distinguished into pecuniary and technological economies of scale. Pecuniary scale economies are transmitted through price effects, whereas technological scale economies alter the technological relationship between inputs and outputs.

There are at least several sources of scale economies. The first is the indivisibility of certain investments. This is related with the processes of mechanization and automation that affect the minimum efficiency of scale. Therefore, it is not economical to use the inputs below a certain level of output. Some examples are in the use of machinery, equipment, warehouses, outlets, administrative departments, R&D, and marketing. Second,

specialization of resources is associated with a division of labor (economies of specialization). This also involves an indivisibility of investments. Nevertheless, specialization improves the refining of skills that result in time saving, an increase in productivity independently, and finally a lowering of average costs. The third source is related to an increase in dimensions, so that it improves the capacity related to the content and cost of space. For instance, bigger containers can reduce average cost. The fourth source of scale advantages is inventory economies: a cost saving that arises when a certain minimum level of spare inputs is sufficient. The fifth source of scale advantages is marketing economies: a cost saving that arises from marketing activities to sell the products.

Economies of scope. Economies of scope are the reduction in average unit cost resulting from the combined production of two or more products in one firm. Scope refers to the number of products produced by one firm. This is possible because of the use of multi-purpose inputs. The source of economies of scope stem from, first, complementary regarding materials, risks, time, and brand names; second, interactions between inputs; and third, indivisibilities that may cause a fall in the unit cost of transformation and market transactions.

Economies of experience. Economies of experience is the reduction in the average unit cost due to an increase in total production output or experience over time.

Economies of sequence. Economies of sequence is the reduction in cost due to vertical integration within and beyond a certain industry. These economies are associated with technical economies for integrating some production processes.

2.5 Flexibility

Small firms are relatively strong in terms of behavioral characteristics which stem from flexibility. This section explains the flexibility of small firms as a main advantage. Flexibility is about an adaptive response to environmental uncertainty (Gupta and Goyal, 1989). Flexibility is needed to manage operational activities. Flexibility is critical for small firms as it allows them to survive in a volatile environment. Although flexibility covers several aspects, Stigler (1939) stresses that competitive advantages of small firms are enhanced by flexibility in terms of output. Fiegenbaum and Karnani (1991) support Stigler

and explain that the output flexibility contributes to competitive advantages: since small firms are more willing to adjust their output, and they compensate cost inefficiency with flexibility in volume to increase profit. Meanwhile, MacMillan et al. (1982) and Tellis (1989) emphasize increasing flexibility in production as well as in price. And with regard to costs, small firms also benefit from flexibility since they have lower adaptation costs when the demand environment changes, as in the case where consumers request different products. As new production technologies are generated, small firms are able to adapt to new conditions rapidly and at lower cost.

Sak and Taymaz (2004) identified four sources of flexibility: technology, employment, networking, and entry/exit:

- *Technological flexibility.* Technological flexibility allows rapid and less costly changes in machine set up. Small firms achieve relatively constant unit costs for a broad range of output and are less sensitive to changes in product characteristics. In flexible manufacturing, a firm applies a just-in-time production system that requires lower input and output inventories. The adoption of this manufacturing flexibility leads to firm profitability (Carlsson, 1989).
- *Flexibility in labor.* Small firms adopt flexible employment relationships or flexible forms of employment. This mechanism can adjust quickly to changes in the economic environment. Atkinson (1984) classified three types of flexibility in labor as numerical flexibility, wage flexibility, and functional flexibility. Numerical flexibility is when the number of employees and work hours can be increased or decreased depending on the demand for labor. In other words, firms can make rapid adjustments in employment due to abrupt changes in demand for a final product. Wage flexibility is when the wage rate depends on firm-specific factors such as its financial position, demand changes, etc. Functional flexibility takes place when employees can quickly and smoothly be deployed between different activities and tasks. As this flexibility requires multi-skills, it enhances the employment of skilled workers, reduces slack or idle time, and increases the utilization of labor.
- *Systemic flexibility.* This flexibility arises from networking. Small firms can enhance efficiency and flexibility by developing a network that spreads benefits from collective learning and sharing common resources (Piore and Sabel, 1984).
- *Dynamic flexibility.* This flexibility is due to easy entry and exit from the market (Caves, 1998). In this dynamic perspective, small firms contribute to employment generation and reduce the negative impact of economic fluctuation.

A study by Mills and Schumann (1985) found evidence related to technological flexibility and demand fluctuations affirming that small firms have a greater capacity to adapt to environmental changes. This allows them to resist competition based on costs, such as that stemming from scale economies. The results confirm that small firms have greater production variability, employment variability, and profit variability than large firms. Although flexibility is claimed as being inherent in small firms, from their study they found that not all characteristics of small firms in regard to flexibility are more advanced than large firms. Only in dynamic flexibility are small firms higher than large firms (Sak and Taymaz, 2004). Therefore, to consider flexibility as a source of competitive advantage is inconclusive.

For small firms disadvantages in limited resources may be overcome through sensitivity to caprice and opportunities in their environment, behavioral flexibility, and strategic initiatives (Visser, 1996).

2.6 Sources of competitiveness

To understand the competitiveness of small firms, this section explains the concept and the source of competitiveness for small firms, including those from developing countries. This section starts with the introduction of the concept of competitiveness in general.

2.6.1 Concept of competitiveness

Competitiveness is defined as the ability to compete (Ambastha and Momaya, 2004). It is the ability to design, produce, and or market products superior to others offered by competitors, by considering price and non-price quality. Competitiveness is crucial as it determines a firm's survival and success, particularly in the hyper-competitive era of increased globalization. At the firm level, many theories exist on competitiveness, but practitioners claim their relevance is rather low, which may be due to changes in the criteria of competitiveness. In their study, Nonaka et al. (2000) discuss the limitations of traditional theories and suggest the need of a new perspective. In the meantime, competition pressures have also resulted in popular studies that seek to identify sources of competitiveness.

Buckley et al. (1988) offer a framework to address the question of the sources of competitiveness. They suggest the firm competitiveness can be obtained from the application of three aspects: competitive performance, competitive potential, and management processes. These three aspects affect each other. In addition, the World

Competitiveness Report (1993) suggests that competitiveness involves a combination of assets that can be inherited (e.g., natural resources) or created (e.g., infrastructure) and processed; and processes transform assets to achieve economic gains from sales to customers. Outcomes can be obtained through assets and processes (Ambastha and Momaya, 2004) or potential and process (Buckley et al., 1988).

According to Ambastha and Momaya (2004), the sources of competitiveness are assets and processes that provide competitive advantages. *Assets* include technology, human resources, culture, system, reputation, or brand. *Processes* generally refer to the management functional process, which may include IT applications, manufacturing, marketing, designing and deploying talent, managing relationships, persuasive power, flexibility, adaptability, quality, innovation, and strategies. Performance can be profitability, price, costs, variety, range, productivity, new product development, market shares, value creation, customer satisfaction, etc. Many scholars perceive these indicators to be surrogate competitiveness.

2.6.2 Determinants of firm performance

Literature shows that the sources of competitiveness vary. From the competency approach, the sources are strategy, structure, competence, capability to innovate, and other tangible and intangible resources (Barlett and Ghoshal, 1989; Hamel and Prahalad, 1994). Johnson (1992) and Hammer and Champy (1993) emphasize that operational efficiency, cost effectiveness, and quality consciousness are necessary in the provision to customers of greater value and satisfaction beyond that of competitors. Barney (2001) and Sushil (2000) highlight the dynamic capabilities in terms of flexibility, agility, speed, and adaptability, whereas O'Farrell (1992) suggests that price, quality, design, marketing, flexibility, and management are sources of competitiveness. Meanwhile, other scholars focus on a specific element as the source of competitiveness. For instance, Corbett and Wassenbove (1993) argue the critical role of marketing; Ross et al. (1995) emphasize information technology; Swann and Taghave (1994) underline product quality, whereas Grupp (1997) highlights a firm's innovation.

For small businesses, Churchill and Lewis (1983) identify eight factors that determine their ultimate success or failure. Factors that relate to the company are financial resources, personal resources, system resources, and business resources. Factors that relate to the owner are his goals for himself and for the business, operational ability, managerial ability,

and strategic ability. The impact of these factors may change as the business shifts from one growth stage to another.

Based on his study of small firms in several UK industries, for competitiveness Pratten (1991) emphasizes the importance of product development, quality of customer service, efficiency of production, marketing expertise, and low overhead costs. Slevin and Covin (1995) identified firm structure, culture, human resources, product/service development as factors that affect the competitiveness of small firms. Strategic management research identifies various strategic determinants such as structural, managerial, cultural, and procedural aspects that create conditions for high performance of small firms (Alpkan et al., 2007; Covin and Covin, 1990; Deshpande and Parasuaraman, 1986). They argue moreover that, to be competitive, small firms need to effectively combine all relevant internal organizational factors such as strategy, culture, climate, processes, and procedures so that firms can readily adapt to rapidly changing customer demand and a dynamic market (Alpkan et al., 2007; Baker et al., 1999).

The processes in achieving competitiveness are also influenced by the key player, the entrepreneur (Horne, 1992). The OECD (1993) also underlines the role of the owner/manager, since it affects the decision-making processes which then determines the firm's overall strategies. The human factor role is also stressed by Stoner (1987), who points out that the key distinctive competence of small firms is the experience, knowledge, and skills of the owner and the employees. Meanwhile, Slevin and Covin (1995) suggest the crucial role of the founder who is involved in the detailed operations of a small business.

Although most of the factors identified as sources of competitiveness are internal to firms, not all factors discussed above are applied in small firms in developing countries, so that not all factors above are relevant as the source of competitiveness. Regarding small firms from developing countries, Albaladejo and Schmitz (2001) underline technological and marketing capabilities as the key internal factors that lead to the competitiveness of firms. Technological capabilities are the knowledge, skills, and efforts required to incur an indigenous process of technological development by increasing efficiency in production activities (production capabilities). The production capabilities cover quality control, production scheduling, and preventive maintenance. Marketing capabilities are required to make products available and attractive to buyers which covers establishing a marketing channel from the factory, organizing logistics, promotion, and after sales service.

2.7 Innovation

As explained in Section 2.6, firm competitiveness can be derived from many sources. It is indicated that innovation is one source of competitiveness, but compared to other sources it has a special position. According to Heunks (1998), innovation determines the survival and success of firms. In the lifecycle approach, innovation is needed for firms to grow. While they are constrained by limited resources, small firms need to find ways to be innovative, e.g. through collaboration. This section therefore describes innovation by small firms in developing countries and the networking process for innovation.

2.7.1 The nature of innovation by small firms

Literature notes that small firms have advantages in innovation, especially in developing new products involving new technology and new ideas for a limited market (Pratten, 1991). The advantages of small firms in innovation cannot be separated from the flexible nature of small firms discussed above. Although Schumpeter argues that innovation is primarily produced by large firms in a concentrated market, he views small firms and new firms as playing an innovative role in what is called the process of creative destruction.

The performance of small firms in innovation is stressed by several studies (Weinberg, 1990; Acs, 1991). Other scholars also show evidence such as the level of innovation per dollar of R&D is inversely related to firm size (Bound et al., 1984; Acs and Audretsch, 1991; Cohen and Klepper, 1996). Moreover, small firms have to be more efficient in their use of capital and labor resources in producing innovation (Acs and Audretsch, 1991). Nooteboom (1994) emphasizes several reasons for superior small firm innovation: they benefit from being less bureaucratic in their decision-making process; they have fewer hierarchical layers, and are more informal and have less documented communication. Therefore, decision-making is faster with fewer filters to eliminate radical novelties. Small firms are more likely to participate in the market for technological innovation (Hicks and Buchanan., 2003). They are faster at recognizing opportunities, more flexible in adjusting a research plan and in implementing innovation, better able to adjust employee incentives to provide optimal innovative efforts, and more flexible regarding job assignment and time devoted to a task (Roger, 2004).

Nevertheless, many studies that examine the relationship between firm size and innovation do not give clear answers. For instance, a study on Schumpeter's hypothesis supports the argument that large firms should be more innovative (Cohen et al., 1987). The reasons lie in an imperfect capital market; large firms may have better access to financing

for R&D-related projects, due to the availability and stability of internal funds. Large firms also have advantages, since R&D generally involves significant start-up costs and economies of scale and scope. Furthermore, large firms enjoy advantages from non-manufacturing activities such as marketing, sales, and distribution to commercialize the innovation output. Large firms can more easily spread the risks of R&D by holding a diversified portfolio (Holmstrom, 1989).

Innovation requires resources, so it is reasonable to assume that firms with more resources are more likely to innovate than firms with fewer resources. In this aspect small firms have disadvantages, mainly due to a lack of resources in terms of two noteworthy aspects (Hedge, 2004):

- *From human skills and talent*. The capacity to innovate is often derived from single individuals; in small firms, mostly the entrepreneur. However, many small firm entrepreneurs have narrow views, lack skills, and individual capabilities that prevent innovation and growth.
- *From finance*. Innovation activities require financial support. Innovation activities such as R&D need a lot of money, since there is a time lag between the investment and the yield of project. The firms also require financing for the plant and equipment to produce new products, for access to technology information to make the product, and to market its output. Although innovation can be financed internally or externally, most small firms are constrained by internal financing. Therefore, it has been suggested that small firms establish networking or collaboration in order to overcome these limitations.

The evidence mentioned above is mostly drawn from developed countries. Studies on innovation from developing countries are limited and sporadic. Nelson (1993) underlines the weaknesses of linkages between knowledge production and the economic system, whereas Knorringa (2002) emphasizes that different institutional settings can seriously affect radical innovation. In addition, Intarakumnerd et al. (2002) show those local firms have grown without deepening their technological capabilities where the technological learning is very slow and passive.

2.7.2 Networking for Innovation

The importance of collaboration for innovation is documented widely in the literature, and some studies in biotechnology emphasize the advantage of this collaboration (Baum et al.,

2000; Oliver and Liebeskind, 1997). The need to network in order to innovate is not only required in biotechnology but also in many other sectors (Pittaway et al., 2004; Elg and Johansson, 1997; Hyun, 1994).

Studies show that collaboration for the sake of innovation vary, depending on the type of innovation. The partner can be in the networking interface of firm, such as suppliers, distributors, competitors, or customers; may be in the networking infrastructure such as consultants, professional associations, science partners, trade associations, business clubs, investment networks, clusters, centers for collaboration, industry networks, incubators, or science parks (Pittaway et al., 2004).

To avoid disadvantages, Pratten (1991) suggests several ways for small firms as follows: (1) Link with large companies; by selling their products, getting supplies, or establishing other relationships. (2) Establish a relationship with other local firms; by selling their products, residing in a location close to other similar firms or service providers, or residing in industrial districts. (3) Build a relationship with universities and polytechnics. (4) Get assistance from local government and local authorities.

Small firms' use of external sources or collaboration can be an effective and efficient way to increase innovation. First, it might facilitate access to complementary assets needed (Hagedoorn, 1993). Second, it might encourage the transfer of codified and tacit knowledge (Ahuja, 2000; Doz and Hamel, 1997). Third, it might reduce the innovation costs as it spreads costs among different parties (Hagedoorn, 2002; Veugelers, 1998), while at the same time reducing the risk of the innovation. From their review on networking and innovation, Pittaway et al. (2004) identify the benefits of cooperation as: (1) risk sharing (Grandori, 1997); (2) obtaining access to new markets and technologies (Grandrori and Soda, 1995); (3) speeding products to market (Almeida and Kogut, 1999); (4) pooling complementary skills (Eisenhardt and Schoonhoven, 1996; Hagedoorn and Duysters, 2002); (5) safeguarding property rights when complete or contingent contacts are not possible (Liebeskind et al., 1996); and (6) acting as a key vehicle for obtaining access to external knowledge (Cooke, 1996; Powell et al., 1996). However, the role of cooperation is important not only in promoting development of innovation and diffusion technology but also for learning about innovative work practices (Pittaway et al., 2004).

Previous studies found that innovative firms are more likely to use external sources of knowledge either as supplements or as complements to their own knowledge endowment than non-innovative firms (Pratten, 1991). Compared to large firms, small firms rely more heavily on external knowledge networks as an input to innovation (Feldman, 1994).

Moreover, establishing linkages between various actors (government, universities, and industries) is important to create a culture of innovation, especially where innovative capabilities are lacking, weak, or even absent. Based on their study in Singapore, Malaysia, and Thailand, Berger and Diez (2006) argue that among the cooperation partners, firms focus on cooperation with their customers as the most important, followed by associate overseas companies, suppliers, technical service providers, R&D institutions, and universities. This argument is supported by Kauffman and Todtling (2001), who indicate that the most important partners from the business sector are customers, followed by the suppliers.

The role of external sources is important for small firms, especially those from developing countries that may not have formal institutional arrangements to carry out R&D (Becker and Dietz, 2003). Firms that view innovation and R&D as valuable highlight external knowledge sources (Arvanities and Hollenstein, 1994; Gambardella, 1992). A study by Rosendberg and Nelson (1994) supports the idea that universities are important as external providers of research (besides government organizations, customers, and even competitors) to provide inputs for the firm's innovation process. Besides universities and research centers (Gerwin et al., 1992; Santoro, 2000), sources of innovation can also be accessed from existing suppliers and customers (Shaw, 1994; Von Hippel, 1988), potential lead users (Quinn, 1985; Von Hippel et al., 1999), and even potential or existing industry competitors (Dodgson, 1993; Hamel, 1991).

In their study on Italian firms, Audretsch and Vivarelli (1994) found that patent output depends on the level of R&D within the region and also on the region's level of university research. In their study on small U.S.A. semiconductor firms, Almeida and Kogut (1997) found that small firms are linked more closely than large firms to regional knowledge networks. Meanwhile, Love and Roper (2001) argue that intensity in the network has a positive influence on the number of innovative small manufacturing firms. However, Karlsson and Olsson (1998) found different evidence from their research. They argue that the adoption of innovation by Swedish firms does not affirm that small firms rely more than large firms on the regional environment. Nevertheless, cooperation in the cluster network was also frequently found in developing countries, and most are important in innovation enhancement (Nadvi, 1999; Schmitz, 1999).

2.8 Summary

The importance and performance of small firms is intensively discussed in the literature. In order to learn about small firms' behavior, scholars try to identify the characteristics that stem from particular disadvantages, specifically from (dis)economies of scale, including scope, sequence, and experience. These disadvantages affect the transformation process from inputs to outputs, innovation, marketing, and risk management. Nevertheless, small firms also have advantages in behavior, due to flexibility that causes them to respond easily to changes in the market and environment.

Previous studies reveal many sources of competitiveness for small firms, but innovation has a special place in determining firm competitiveness and performance. As small firms are constrained by their limited resources, innovation that relies on internal sources is hardly possible. Therefore, collaboration with various partners offers possibilities for small firms to overcome their limitations. To obtain and maintain competitive advantages, small firms can cooperate in innovation either with external partners such as suppliers, customers, and competitors, or with a third party such as consultants, professional associations, universities, and other science partners. To be innovative themselves, small firms can also get involved in institutional mechanisms such as clusters, incubators, or centers of cooperation.

Chapter 3

Industrial Clusters and Firm Performance

3.1 Introduction

In an industrial cluster, local firms can be helped to overcome their growth constraints to compete in distant markets (Giuliani et al., 2005). By clustering, the competitiveness of small firms may be enhanced. Pyke et al. (1990) note that the cause of small firms' uncompetitiveness is not that they are small in size, but that they often are isolated from others. A study on the Gammara cluster in Lima, Peru, provides evidence according to which cluster firms perform better than the others (Visser, 1996). The industrial cluster approach has become increasingly popular as a way to improve competitiveness, and is becoming a dominant paradigm in economic development (Morgan, 2004). Policy makers recommend that clusters be adopted in such countries as New Zealand, the U.S.A., and the European Union. International institutions such as the World Bank (Morgan, 2004) and ILO (Pyke et al., 1990) also suggest the cluster approach, despite the fact that cluster development processes are as yet not fully understood.

This chapter provides an overview of some key concepts like industry clusters, mature clusters and life cycle of industries in order to explain why and how firms in clusters can enhance innovativeness and create competitive advantages. In an attempt to capture the prevailing conditions of furniture clusters in Central Java, we also present an operational definition of industry and mature clusters. We furthermore describe how the life cycle of an industry has implications for cluster innovation. The importance of innovation in developing countries' clusters and cluster trajectories that allow clusters to reach upgrading capabilities is also discussed. The structure of this chapter is as follows. Section 3.2

provides the definition and typology of clusters. Section 3.3 describes some views on clusters as a source of competitive advantages. Section 3.4 highlights a number of studies on industrial clusters from developing countries. Section 3.5 examines the industry life cycle and industrial clusters, and Section 3.6 explains the importance of cluster innovation in developing countries. Section 3.7 describes innovation opportunities for clusters in developing countries, and Section 3.8 concludes.

3.2 Definition and typology of clusters

3.2.1 Definition of a cluster

Rabellotti (1995) defines an industrial cluster according to the major characteristics of a cluster model. First, an industrial cluster can be a geographically concentrated group of SMEs that are specialized by sector. Second, there are forward and backward linkages based on market and non-market exchanges of goods, information, and people. Third, there is a common cultural and social background linking economic agents; among them they create a behavioral code that can at times be explicit but is often implicit. Fourth, there are networks of public and private local institutions supporting the economic agents acting within the cluster.

We refer in this section to the definition of Rabellotti (1995) as the ideal model of an industrial cluster, since there is a number of cluster definitions in the literature. Schmitz and Nadvi (1999), for instance, define a cluster as a sectoral and spatial concentration of firms. Porter (1998) gives an advanced definition by specifying clusters as groups of companies and institutions co-located in a specific geographic region and linked by interdependencies in providing a related group of products and/or services. Although Porter stresses the importance of interdependence, he does not explicitly mention the cultural and social characteristics of a cluster. Interdependence distinguishes a cluster with a proximity/concentration of a group of firms, also confirmed by Rabellotti (1995). Rabellotti states that a key factor required in an industrial cluster is specialization and the division of labor between firms in the cluster. The amount of specialization creates a level or density of inter-firm relationships usually known as an industrial cluster's "depth" (Albu, 1997). This element is regarded as the source of increasing returns from an industrial cluster (Schmitz, 1999). Nonetheless, the definition of a cluster often is criticized as too vague and the concept may confuse policy advice (Martin and Sunley, 2003). The presence of various definitions often does not help, but rather hinders what the term *industry cluster* actually means (Morgan, 2004). However, when confronting the reality of

a cluster in developing countries we observe that no single definition exists; it more so resembles a spectrum, with the ideal type being that described by Rabellotti.

Although we realize that no single definition exists, industrial clusters can be operationally defined as a geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries and associated institutions in a particular field where they compete but also cooperate, and enjoy local externalities. While local externalities can be operationally defined as benefits enjoyed by firms in a cluster can be distinguished as benefits in access to inputs and services, access to skilled workers, and access to information. The constituent elements of this definition are mainly taken from Porter (1998) and Marshall (1920).

3.2.2 Typology of clusters

This section describes the classification applied to clusters frequently found in developing countries. First, a cluster can be classified according to the type of product: footwear film, hotel, financial service cluster, etc.

Second, based on the level of innovative capability in the cluster, Schmitz and Nadvi (1999) differentiate between stagnant (dormant or survival clusters) and dynamic (mature clusters). A stagnant, dormant or survival cluster is unable to expand because it has no innovative capabilities but is able only to survive. In developing countries this cluster can be found both in rural and metropolitan areas; it operates only to fulfill local market demands, uses limited technology, and has limited potential for technological and organizational upgrading. Although located in close proximity, the firms operate independently. Technological collaboration and labor or equipment sharing is relatively non-existent. Products from this cluster include tofu, tempe, and thin vermicelli noodles, among others. On the other hand, a dynamic or mature cluster has the potential to develop and become increasingly competitive, so that products can enter and compete in global markets. These products include furniture, shoes, and garments.

Third, Giuliani et al. (2005) distinguish a cluster according to a combination of product characteristics and processes in four groups:

(1) Traditional manufacturing cluster, mainly labor intensive, with traditional technological industries: textiles footwear, tiles, and furniture.

(2) Natural resource-based sectors, implying the direct exploitation of natural resources, for example, copper, marble, fruit, flowers, etc.
(3) Complex product industries, including, among others, automobiles, car components, aircraft industries, ICT and consumer electronics.
(4) Specialized suppliers, in Los Angeles cases, essentially software.

Fourth, Markusen (1996) identifies a cluster according to the structure of the firms and the role of the leader in the cluster:

(1) A Marshallian or the Italianate Industrial District is a cluster consisting of many small and medium sized firms that both compete and cooperate. Long-term collaboration exists among these small firms, and local institutions play an important role in this industrial district.
(2) A hub and spoke cluster has a limited number of leading larger firms and many subcontractors. The larger firms act as anchors or hubs in the regional economy with suppliers and related activities situated around them, like spokes inside a wheel.
(3) A Satellite Platform is comprised of small and medium sized firms that produce for leading firms located outside the cluster.
(4) A state-anchored industrial district is a business structure dominated by one or several large government institutions such as military bases, state or national capitals, and large public universities, and surrounded by suppliers and customers.

Fifth, Gordon and McCann (2000) identify three forms of ideal types of concentrations of local firms, viz. pure agglomeration, the industrial complex, and a social network. Pure agglomeration is a concentration of firms without cooperation among actors beyond their individual interests in an atomized and competitive environment. The industrial complex is a co-location of firms in a particular place in order to minimize transportation costs. Meanwhile, a trusting relationship exists in a type of economic concentration based on a social network, in which firms are willing to take risky cooperative joint efforts to reorganize their relationships and support mutual goals.

Although industrial clusters are discussed widely, there is still no agreement on the concept of a cluster. Actually, clusters can be classified in many ways, with respect to product, technology, structure, and so on. Despite the concept and classification, the outcome of a

study from the use of different concepts and classifications of clusters may differ due to conceptual variance.

3.3 A cluster as a source of competitive advantages of firms

Scholars believe that an industrial cluster improves the competitiveness of small firms. Among industrial cluster scholars, there are several views about what advantages can be derived from a cluster. This section describes four different classes of competitive advantages, viz. external economies, innovation, collective efficiency, and flexible specialization.

External economies have been emphasized by scholars such as Marshall (1920), Arrow (1962), Romer (1986), and Krugman (1991). Marshall identified three advantages that can potentially improve firm performance: sharing the suppliers of intermediate inputs, sharing a pool of labor, and sharing information (O'Sullivan, 2003). These advantages are usually referred to as "locational economies" or "agglomeration economies" (McCann, 2001), as firms in the cluster enjoy cost savings due to the decrease in production costs. By sharing suppliers of intermediate inputs, firms in a cluster enjoy lower costs in input supply provisions, business services, public services, and infrastructures. Regarding sharing inputs, firms receive benefits from the potential losses due to the uncertainty and rapidly changing demands of their products (Rosenthal and Strange, 2004). The availability of a pool of specialized labor may improve firm performance as a sufficient number of highly skilled workers can be recruited, and firms need not spend more money for further training. Besides these benefits, a cluster also makes it possible for firms to hire more workers during the good times and reduce the number of workers during the bad times. Moreover, knowledge spillovers can improve a firm's processes and lead to products at lower cost. In addition, by locating in a cluster, firms can also assess themselves and whether their products are saleable in the industry. From these three factors, firms in a cluster experience economies of scale that reduce transaction costs which cannot be enjoyed by outside firms. In other words, firms in a cluster enjoy increased efficiency and productivity that may lead to enhanced firm performance. Rosenthal and Strange (2004) support Marshall's theory that industrial clustering improves competitive advantages.

External economies are not only enjoyed by firms in clustering in a particular industry, but also by firms located in an urban area, referred to as urbanization economies. The decrease in production costs is related to the scale of the entire urban economy and the benefits enjoyed throughout the city (O'Sullivan, 2003). External economies appear to

arise from the clustering of firms from different sectors or diversity (Jacobs 1969; Glaeser et al., 1992).

It is true that scholars acknowledge the role of innovation as an important role in the growth of industries and firms (Acs and Audretsch, 1990; Geroski, 1991). They emphasize knowledge spillovers as the source of innovative output and productivity (Griliches, 1991; Nadiri, 1993). According to Porter (1990), high innovation in a cluster is driven by competition among firms. He argues that firms in a cluster will be more innovative for several reasons. First, a cluster allows for the rapid perception of new buyer needs; second, a cluster concentrates knowledge and information; third, it opens possibilities for rapid assimilation of new technology; fourth, it provides richer insights into new management practices; fifth, it facilitates ongoing relationships with other institutions; and sixth, a knowledge-based economy is most successful when knowledge resources are localized (Simmie, 2004). Audretsch and Feldman (1996) support this argument by providing evidence for the important role of geographical concentration to improve innovative activities and output. In an industrial cluster, firms enjoy increasing returns from a process of positive feedback and lock in. Meanwhile, in developing countries' clusters, innovation is very limited, and most clusters are stagnant. Experiences indicate that innovation is largely dependent on actors from *outside* the cluster, especially from foreign countries (Bair and Gereffi, 2001; Nadvi, 1999).

Schmitz (1999) argues that external economies cannot sufficiently explain the advantages of clustering, as it is static, incidental, and enjoyed by all firms in the cluster. The network scholars suggest that, to be competitive, clusters need collective efficiency, not merely efficiency from external economies, but also joint action or cooperation with other firms. Collective efficiency comprises external economies and joint action, usually referred to as unplanned and planned collective efficiencies (Schmitz, 1999); or as passive and active collective efficiency (Nadvi, 1996).

Joint action is the cooperation between two or more firms that encompasses all actions initiated by an individual firm (such as equipment sharing) or is initiated as a group by forming or joining an association (such as a business association). Joint action can be vertical or horizontal cooperation. Vertical cooperation can be backward or forward, whereas horizontal cooperation can be divided into bilateral and multilateral cooperation (Schmitz, 1999). The increase in global market requirements requires vertical cooperation between manufacturers and suppliers to mutually increase efficiency, quality, and speed of delivery. Horizontal cooperation also solves several common problems or is undertaken to

improve cost efficiency, and entails equipment sharing, joint product development, sharing orders, or joint marketing.

Piore and Sabel (1984) and Boari et al. (2003) suggest that *cooperation* among firms is a powerful determinant of the competitive advantages of a cluster and the individual firms within it. The critical role of joint action is also stressed in previous studies; the Sinos Valley cluster in Brazil (Schmitz, 1999), the Sialkot cluster in Pakistan (Nadvi, 1999), and the Italy cluster (Rabellotti, 1999) to name a few. Although collective efficiency is an important element in creating competitive advantages, Weijland (1999) stresses that collective efficiency only emerges when certain conditions are met, i.e., the availability of a trade network, effective sanctions, and trust.

Other scholars claim that the source of competitive advantages for firms in an industrial cluster is *flexible specialization* (FS). Best (1990) argues that FS is a good strategy for small firms in an industrial cluster to compete in a changing international market, whereas van Dijk (1995) notes that FS is one factor that influences the success of an industrial district. Although FS has an important role in industrial clusters, there is no agreement on how competitive advantages can be increased. One reason is the absence of a definition of FS that can satisfy scholars (Schmitz, 1990). Capecchi (1990) describes an FS production system as characterized by a small batch of custom-made production; cooperation among different levels of workers in a factory; a high mobility of workers to become independent entrepreneurs; a close collaboration between factories and clients; and small and medium-sized firms that engage in clustering. Van Dijk (1995) clarifies the position by identifying the key elements of FS as multi-purpose equipment and innovation, a cluster of enterprises or small firm communities, interactions/networking, and collective efficiency.

While Van Dijk stresses the production side, Lowson (1998) emphasizes the response of the production system to market changes. Lowson asserts that FS is flexible in both product and process innovations, technology, and production systems, since firms tend to strive towards greater levels of diversity. The adoption of quick response (QR) relates to flexibility by linking organizational activities to actual demand patterns.

From these various views, we can conclude that FS offers potential advantages for small firms in industrial districts in terms of efficiency (economies of scale on cluster level and flexibility), but it requires inter-relations so that firms can respond quickly to increasingly fragmented changes in the market. The widespread subcontracting practices in a SME cluster are usually associated with FS (Alexander and Alexander, 2000). However, although FS may contribute to an increase in the competitive advantages of firms in a

cluster, it has its weaknesses. Critics say that it places too much emphasis on technology (van Dijk, 1995); that the assumption that markets are saturated and differentiated is questionable; and that flexibility in worker usage may have negative impacts on the workers (Schmitz, 1990).

3.4 Industrial clusters and firm performance

This section describes studies on the relationships between cluster factors and developing countries' firm performance. Previous studies document the impact of industrial cluster on firm performance in developed countries and the results are diverse (Molina-Morales, 2001; Bell, 2005; Appold, 1995). In this section we will focus on examples of industrial clusters in Asia: in Ludhiana, India (Tewari, 1999), Agra, India (Knorringa 1999), Tirrupur, India (Cawthorne, 1999); in Sialkot, Pakistan (Nadvi, 1999); in Pekalongan, Indonesia (Sandee et al., 2002); in Jili Zhejiang, China (Sonobe, et al., 2002); in Latin America, Gammara Lima, Peru (Visser, 1997); in Torreon, Mexico (Bair and Gereffi, 2001), and Guadalajara, Mexico (Rabellotti, 1999); in Sinos Valley, Brazil (Schmitz, 1999; 1995); and in Africa (Kenya) Kamukunji, Easlands, and Lake Victoria; in Ghana, Suame, and in South Africa, Western Cape (McCormick, 1999). These clusters can be categorized in general as traditional manufacturing and natural resource-based sectors.

The clusters in the examples produce traditional products (garments, footwear); resource-based products (fishery); and services, which are found mostly in developing countries. The clusters may be located in urban as well as rural areas. Firms from different types of areas can be potentially successful. However, most of the studies are exploratory, based on observations and in-depth interviews with key informants. Some researchers focus on cluster performance, while others highlight individual firms in the cluster. Descriptive statistics usually are applied to portray the performance of a cluster, while a regression analysis is used to examine the impact of several determinants on firm performance to complement the descriptive statistics (Knorringa, 1999; Nadvi, 1999; Rabellotti, 1999).

Despite the lack of agreement on how to measure cluster performance, much of the research uses such variables as number of firms, employment, production value, and export value to measure the economic performance. Most case studies focus on huge clusters, consisting of many firms and employing a large number of workers. Meanwhile, exports, export growth, production value, sales value, profits, number of employees, family labor,

and wages are used to measure the firm performance in the cluster. Most of these measurements are static except the growth of exports that refers to changes over time.

Regarding cluster performance, most of the studies identify upgrading due to an increase in forward and backward cooperation and joint action as reasons for success in addition to improvements in market access, labor market pooling, sharing common inputs and services suppliers, and knowledge spillovers. At the firm level most studies focus on the effects of cooperation, which consist of forward linkages (cooperation with foreign buyers or local buyers), backward linkages (cooperation with suppliers and subcontractors), and cooperation with other firms (bilateral cooperation or multilateral cooperation in trade associations).

Earlier studies on cluster performance identify the important roles of local institutions, local social milieux, and the government (Nadvi and Schmitz, 1994). Several sources that give attention to this matter provide different conclusions. In Pekalongan, a trusting relationship between firms is a crucial factor, but strong trust is not found in Torreon. Furthermore, studies in developing countries provide limited knowledge about the government role. In Jili (China), the local government plays an important role in setting up the marketplace of the cluster in the early stage of development. In Pekalongan the government provides technical and promotional support. However, this study agrees with Nadvi and Schmitz (1994) that the role of the government is rarely a strategic force behind cluster growth.

From these studies we observe that the external economies, innovation, and collective efficiency are mentioned as factors contributing to performance, but flexible specialization is rarely explicitly credited for influencing performance.

The influence of cluster factors on the performance of firms in developed countries provides diverse results. In developing countries results primarily agree that cluster factors play a positive role in the performance.

3.5 Industry life cycle and industrial clusters

Innovation in the industrial cluster cannot be separated from the life cycle of the industry. Thus we next analyze how the industry life cycle impacts on the innovation in the industrial district.

A product life cycle (PLC) is a model to describe the evolutionary pattern of a product from its birth to its decline. A number of studies suggests various stages, but most depict the life cycle as an organism that proceeds through distinct cycles as it ages (Klepper,

1997). The PLC also can be applied to illustrate the life cycle of an industry. Several scholars describe the industry life cycle. According to Williamson (1975), an industry life cycle can be usefully divided into three stages: an early exploratory stage, an intermediate development stage, and a mature stage. The early exploratory stage involves the supply of a new product of a relatively primitive design, manufactured with comparatively unspecialized machinery, and marketed through a variety of exploratory techniques. In addition to low volume, this stage is also characterized by a high degree of uncertainty. In this stage the entry of new firms is highest. In the intermediate development stage, the manufacturing techniques are improved, the market definition is sharpened, and output grows rapidly in response to market demand. In this stage the number of firms starts to decline. Compared to the first stage, the degree of uncertainty of the product on the market is lower. Finally, in a mature stage, management, manufacturing, and marketing techniques have improved to a relatively advanced degree.

Previous studies outline many indicators used to describe the industry life cycle. Among them is the number of firms (Gort and Klepper, 1982; Klepper and Graddy, 1990). In the initial period of a life cycle, the number of firms grows significantly and a shakeout or sharp drop occurs during the maturity and declining stage. Each stage of the life cycle is characterized by many kinds of phenomena, one of which is the nature of innovative activity.

In relation to an industry life cycle, Klepper (1997) distinguishes three patterns of innovative activity. First, innovative activity tends to be the greatest during the earliest phase of a life cycle. Second, innovative activity has a disproportional share during the early and growth path. Third, innovative activity shifts its locus in the maturity stage. In the earliest phase when innovative activity is high, new and smaller firms tend to have relatively innovative advantages, in which Winter (1984) characterizes the phase as an entrepreneur technology regime. Innovative activity is favorable for new firms but unfavorable for established large firms; in the mature phase established large firms tend to have innovative activity. Winter states that the mature phase is characterized by a routinized technological regime, whereby existing firms tend to have innovative advantages that are unfavorable for new firms.

Audretsch and Feldman (1996) identify several factors that determine the geographic concentration of production location such as transportation costs, availability of natural resources, the extent of scale economies, the degree of human capital, and the extent of tacit knowledge. Regarding knowledge spillovers, the contribution of an industrial cluster

not only provides a high endowment of workers' knowledge conducive to innovative activity, but also communication between individuals that facilitates the transmission of knowledge across agents, firms, and industries (Saxenian, 1990). Studies also show how a variety of regional institutions such as universities, trade associations, local business organizations, specialized consultants, market research, and public relation firms providing many cheaper services to local firms, such as technical, financial, and networking. Several pieces of evidence from universities and R&D laboratories from major firms explain the high propensity for knowledge workers to cluster in several geographic regions. The important role of research scientists from universities as the generator of innovative knowledge for the private sector is also emphasized elsewhere (Jaffe, 1989; Acs et al., 1992, 1994).

According to Audretsch and Feldman (1996), innovative activity is determined by the industrial life cycle where tacit knowledge is crucial during the early stage but declines in importance during the latter stages. Tacit knowledge is best transmitted via face-to-face interaction and through frequent and repeated contacts (Von Hipple, 1994). Maggioni (2004) illustrates that the life cycle in a specific industrial cluster can be described by focusing on the variables "number of incumbents" and "time." He distinguishes the evolution in three stages as birth/take off, golden age, and maturity. Although he does not include the possibility of decline, he emphasizes the maximum level to which the cluster can grow. Maggioni describes the interesting aspects as agglomeration economies and diseconomies. In economic geography agglomeration economies are the pulling factors that attract firms to a cluster. Many entrepreneurs with new ideas enter the cluster at this stage by establishing new firms. In Maggioni's view, the transformation from birth stage to mature cluster can be explained by the interactions of agglomeration economies and innovation (Maggioni, 2004). He argues that clustering firms get benefits, but at the same time also incur costs; and the number of incumbent firms determines the benefits and costs. Agglomeration economies and diseconomies can therefore be described as a spectrum. Maggioni distinguishes location benefits into geographical and agglomeration benefits, whereby geographical benefits are unaffected by the number of existing firms, but agglomeration benefits depend on the number of incumbents.

According to Maggioni (2004), a new cluster appears and develops when an innovation is commercially successful, in which a product is associated with the name of a successful area. Maggioni argues that there is a critical size of a cluster that can potentially change the

positive net agglomeration benefits to negative agglomeration benefits for incumbents. In economic geography this is known as the congestion effect.

In sum, a mature cluster can be defined as a cluster that has reached the highest stage of development and does not grow anymore after a period of growth.

3.6 Industrial clusters and the need for innovation

This section explains why innovation is needed to maintain cluster growth. In developing countries, there are two ways in which clusters maintain growth: without relying on innovation (a 'low road' strategy) and relying on innovation (a 'high road' strategy). A 'low road' strategy is sometimes referred to as 'sweat labor', whereas a 'high road' strategy is sometimes referred to as 'labor friendly' (Sengenberger and Pyke, 1992). A 'low road' strategy means that firms compete on low costs. By cost cutting, sales will increase, profits will be boosted, and more employment can be offered eventually. Without innovation, the only way to keep costs low is to pay the lowest wages possible, provide the cheapest work conditions, use the cheapest materials, disregard environmental standards, and avoid paying tax. Moreover, firms will rarely invest in the labor force in order to increase their productivity. According to Sengenberger and Pyke (1992), to maintain the low wages, a deregulation on the labor market is needed that makes labor as cheap and flexible as possible. With low wages and poor employment conditions, deregulation hinders firms in acquiring and keeping qualified labor for long periods of time. Therefore, scholars believe that maintaining competitiveness by following a low road strategy is frequently a short-run and undesirable strategy. The emergence of new competitors that offer lower costs may lead to a "race to the bottom" or "immiserizing growth" (Kaplinsky, 2000).

The high-road strategy is a way to improve competitiveness through efficiency enhancements based on innovation. In order to create continuous innovation, wages need to be increased and firms should provide favorable working conditions, as well as safeguard workers' rights and provide adequate standards of social protection. Firm productivity is increased through better organization, better mobilization, and utilization of productive labor which permits the use of technology. Cooperation is needed to exchange information and thereby reach a common efficiency. In other words, continuous innovation is a key strategy for firms to maintain competitiveness in the long term, but this argument is frequently criticized as causing increased costs and limiting efficiency (Sengenberger and Pyke, 1992).

In relation to the need for continued innovation, scholars like Aydalot, Capello, and Camagni emphasize the need to pay attention to the sources of innovation. Their views neatly complement each other. Aydalot (1986) emphasizes the importance of 'milieu innovateur' as the territorial innovation process. 'Milieu innovateur' is a multidimensional reality linking a community of stakeholders to the dynamic creation of a production system, integrating the territorial dimension with techno-industrial paradigms, and considering structural change in the productive system. In this process, the combination of economic, social, cultural and environmental factors creates a unique system called a system of externalities. This 'milieu' stimulates innovation and learning. Aydalot's notion of the milieu innovateur actually refers to the currently popular term 'embededness' which represents a unique logic of exchange that creates possible innovations and are tied by strong trust, rich information exchange, and joint problem solving (Zuchella, 2006).

Meanwhile, economic geographers are more concerned with collective learning. According to Capello (1999), collective learning is a dynamic process of accumulating knowledge transferred across economic agents via interactive mechanisms based on common rules and common organizational and managerial procedures. Collective learning leads to incremental innovation. However, this explanation of local competitive advantage is questioned because of the limited attempts to investigate knowledge flows and knowledge systems (Albu, 1997). Moreover, there is also concern regarding the risk of 'lock-in' which could be faced by clusters and districts as a consequence of technological isolation leading to 'entropic death' (Camagni, 1991). Camagni suggests the need for a cluster to build linkages with external agents and becoming part of an international network. Therefore, experts agree to extend the study beyond the previously dominant internal perspective by linking the local knowledge flow to external (international) clusters. Adding the external dimension as a source of knowledge is important to maintain and establish local endogenous existing dynamics (Camagni, 1991).

The two roads can be regarded as contrasting strategies, but experience shows that the two components may coexist in one cluster or coexist within one firm. Experience shows that a certain road, however, may dominate a cluster (Watzema, 2005). Most scholars claim that implementing a high road strategy is essential in promoting long-term competitiveness (Fleury and Fleury, 2001; Humphrey and Schmitz, 2003). Porter calls for a high road strategy and argues that the lack of innovation associated with the low road strategy will cause the cluster to decline in market value added and market shares, whereas the high road will sustain income growth. In the high road strategy, firms that produce

unique products have little competition from other firms, and may attract buyers to pay a premium price. Clusters can maintain their growth without relying on innovation/upgrading, but this strategy can be maintained only in the short-run. Innovation is therefore essential for clusters to be able to sustain long-term competitiveness, even though this strategy requires investment and involves risks.

3.7 Cluster trajectories, opportunities to gain innovation

This section describes several types of cluster trajectories that provide opportunities for clusters to innovate or upgrade. As mentioned in Chapter 2, small firms can overcome their innovative constraints by linking with large firms that are also their customers. Large companies frequently collaborate with their SME suppliers by providing assistance towards achieving a high quality standard as well as developing products (Pratten, 1991). Studies show that networking with customers is the most effective way, since customers are able to identify novel development ideas (Von Hippel, 1978). Ragatz et al. (1997) suggest that the customer is the most important partner during incremental innovation. According to Pittaway et al. (2004), there are several benefits from establishing network relationships with customers: (1) it opens the possibility to learn current needs and discover new needs in advance of the competition (Bruce and Rodgus, 1994); (2) customers actively engaged in the early stages of product innovation will assist in developing ideas (Bieman, 1994); (3) it reduces the risk of innovation (Gemunden et al., 1999; Ragatz et al., 1997); (4) SMEs learn from customers the likely market potential of a product idea (Gemunden et al., 1999).

As large firms are the most important partners for small firm innovation, the location of the large firms determines the extent to which innovation can be obtained. When large firms are located close to small firms, the intensity of innovation is potentially high due to greater transfer of tacit knowledge from large firms to small firms via direct contacts. Moreover, the location of large firms also extends the knowledge throughout the cluster. In other words, large firms open opportunities for innovation activities of the entire cluster. Because large firm location choices are not static and can change over time, it may determine the innovative activities of a cluster in which small firms are located. With regard to the shift of location of large firms, Knorringa (2002) identifies three trajectories: first, the cluster evolves from a basic agglomeration to the Italianate industrial district; second, the cluster evolves from a basic agglomeration to a hub-and-spoke cluster; and third, the cluster evolves from a basic agglomeration to a satellite type.

In the *Italianate trajectory* the weapons used to build competitive advantages are innovative designs, logistics, and marketing developed within the cluster. Cooperation among firms is intensive; firms can learn from each other and implement an incremental process (and product) innovation. The Italianate type offers higher opportunities for upgrading capabilities than other trajectories. However, the Italianate type is hardly ever found in developing countries, because it needs investment to keep technology continuously updated, and has a different social structure. In the *hub-and-spoke trajectory* a small number of large firms control the manufacturing relationships with their suppliers dominating innovation. Because firm leaders live with their suppliers in the cluster, a hub and spoke trajectory offers relatively high potential for endogenous upgrading capabilities. This trajectory is commonly found in developing countries. In a *Satellite trajectory* firm leaders are in an area separate from the cluster where small producers reside. As a result, a Satellite trajectory offers the fewest opportunities to create endogenous upgrading capabilities, because large firms in different areas are mostly trading houses and keep their designs and marketing capabilities to themselves.

According to Knorringa, even though many developing country clusters are successful in getting development from external technology, firms in a cluster need endogenous upgrading capabilities, which allow them to implement and build incremental innovation important to sustain competitiveness. These are known as endogenous technological and organizational capabilities; their upgrade is the source of competitiveness of cluster firms and will attract buyers to the cluster.

3.8 Conclusion

Clustering of small firms may help them overcome growth constraints and compete in distant markets. By clustering, small firms' competitive advantages can be improved. The industrial cluster approach has become a popular paradigm in economic development, although a unified definition of a cluster has yet to be formulated. Scholars also propose many types of industrial clusters to analyze their characteristics and evolution. They have several different views regarding the source of competitive advantages from industrial clusters. However, all of the approaches highlight innovation as an important contributor to competitive advantages of firms.

The contribution of a cluster to competitive advantages of the firm is also shown by the improvement in the performance of firms within the cluster while the role of a cluster in innovation is also influenced by the life cycle of the industry. For a developing country

cluster, innovation/upgrading is necessary, as it may lead to sustained growth. As clusters in developing countries often lack innovation capabilities, cooperation with large firms can overcome small firm resource constraints. Moreover, location of large firms increases intensity of knowledge transfers and diffusion innovation throughout the cluster. Location decisions of large firms are indeed dynamic. According to the majority of research, the hub-and-spoke trajectory provides the greatest chance for innovation and upgrading.

Chapter 4

International Networks and Firm Performance

4.1 Introduction

The ongoing process of globalization brings opportunities, risks, and challenges. Apart from the risks that firms inevitably encounter, the integration of a world economy and the rapid development of technology provide enormous benefits for firms to maintain competitiveness and improve performance. Developing countries should therefore take advantage of opportunities by involving small firms in the international market; such a link to the global network can indeed improve competitiveness. Participation in the international chain means that firms can overcome constraints and barriers that obstruct their entry in the international market.

This chapter deals with how small firms can improve performance through international linking. Section 4.2 explains the reasons and processes for small firms' internationalization and the barriers they face in exporting. Section 4.3 deals with foreign direct investments (FDI), global buyers, and global value chains. Section 4.4 analyzes small firm upgrading and governance in a global value chain, whereas Section 4.5 describes some findings on the impact of linking to an international network and its effects on firm performance. Conclusions follow in Section 4.6.

4.2 The internationalization of small firms

4.2.1 The internationalization process

Internationalization is "a process of increasing involvement in international operations" (Welch and Luostarienen, 1988). Calof and Beamish (1995) define internationalization as "the process of adapting firms' operations (strategies, structure, resources, etc.) to international environments." For small firms, the decision to internationalize is a difficult choice, as it brings along risks, and small firms are already constrained by limited resources. Experience also shows that many small firms are successful in their domestic markets but fail when they go international. Although the international market is unlimited, competition is also tight. Many new small firms from developed and developing countries have nevertheless gradually entered the market. There are many reasons for small firms from developing countries to enter foreign markets. Among them are to achieve higher profit margins, diversify business risks, expand production volume, and achieve a different position in the local market (Kazem, 2005). Previous studies show that many small firms from developing countries enter the export business unintentionally after receiving an order from a foreign buyer (Sebhatu, 2005).

Internationalization theories can be classified as *stage theories* and *non-stage theories*. The stage paradigm views internationalization as a slow and continuous process that is gradual, sequential, step-by-step, and incremental; the Uppsala Internationalization Model is one example (see. Johanson and Vahlne, 1990). The non-stage model sees the process as the other way around: not as a gradual process.

The Uppsala Internationalization Model, suggests four stages in the process. Stage 1 has irregular export activities; stage 2 has exporting by independent representatives; stage 3 has the establishment of foreign sales affiliates; and stage 4 has the installation of foreign production facilities. Those stages begin from low committed exporters to highly committed exporters as they gain knowledge and experience from the international market. However, Millington and Bayliss (1990) argue that the internationalization process stages are the exception rather than the rule. They claim that firms may be able to skip certain stages because of the overall experience they gain in the international market. Sullivan and Bauerschmidt (1990) also support this finding. Moreover, many small firms have been operating in the global market ever since they were first established, which explains the phenomenon of "instant international firms" or "born global firms" (Etemad and Lee, 2003; Kundu and Katz, 2003; Fillis, 2004).

The non-stage paradigm, which covers such theories as transaction cost economics (TCE), eclectic modeling, and international entrepreneurship,[3] is currently dominated by research from the entrepreneurship approach (Shaw and Darroch, 2004; McDougall, 1989; Andersson and Wictor, 2003; Ripollées et al., 2002; Oviat and McDougall, 1994). The starting point for international entrepreneurship researchers is the fact that some small firms have become significant global players without having followed the internationalization process stages. According to Fillis (2002), this is possible because they already have entrepreneurial competencies such as global vision, creative insight, and an ability to recognize technological opportunities and capitalize on them. This international entrepreneurship approach at first analyzes only new venture firms which had operated in the international market since their inception. Scholars later also began to analyze firms that became international after a period of time in the local market. They argue that entrepreneurial activity is an ongoing process (Zahra and George, 2001; Zahra, 1993; Zahra and Schulte, 1994). Entering the international market can be viewed as a phenomenal decision, entrepreneurial action, and innovation, because firms proactively and aggressively engage in a process that emphasizes opportunity creation, discovery, evaluation, and exploitation (Shaw and Darroch, 2004).

4.2.2 Barriers to export

Although internationalization consists of several activities such as exporting, licensing, joint ventures, and foreign direct investment (FDI) (Foley, 1999), exporting is the most popular, especially for small firms from developing countries. Therefore, this section will focus on the barriers towards export.

There are several reasons for the popularity of exporting; its expansion has a positive correlation with economic growth in developing countries. Most literature suggests that exporting is critical to the development process of an economy (World Bank, 1991; Johansson and Nilsson, 1997). The export-oriented strategy has also been demonstrated to have led to the success of newly industrialized Asian countries (NICs) (Johansson and Nilsson, 1997). Leonidau (1995) stresses that exporting is the most common mode of

[3] The TCE theory stresses the importance of transaction cost efficiency in the internationalization process. The eclectic model focuses on the role of ownership, location, and internalization advantages. Keeping full control over foreign operations enables a firm to capture the returns from their assets. Meanwhile, the international entrepreneurship paradigm emphasizes the role of the decision maker (entrepreneur) characteristics, a combination of innovative, proactive, and risk seeking behavior that crosses national borders and is intended to create value in an organization.

participation in internationalization as it involves minimum risk, requires low commitment of resources, and offers high flexibility of movement. This option is the most attractive means of market entry (Johansson, 2000).

It is believed that exporting is related to productivity, but there is no guarantee that outstanding performance will lead to a firm's success. The debate on the link between exporting and firm productivity is crystallized into two main hypotheses:[4] the first is the *self-selection hypothesis* (Robert and Tybout, 1997); the second is the *learning by exporting effect hypothesis* (Pack, 1992). The self-selection hypothesis argues that export firms have better productivity because they are usually larger, higher capital intensity, higher R&D spending, pay higher wages/salaries, and offer more benefits to the workers. Because exporting costs are higher, only the more productive firms can afford it. The aforementioned authors stress that good producers tend to export, and before entering the export market, they already have a good performance. On the other hand, the learning by exporting hypothesis argues that a firm can benefit from improving productivity by exporting. An exporter acquires information from a foreign customer, who might suggest ways to improve the production process, product design, and quality. Exporting is advantageous in that it provides support for structural changes and knowledge transfer from foreign buyers, ability to attract the best skilled workers, and opportunity to purchase state-of-the-art technology. The second argument is more reasonable for small firms. These two hypotheses are a clear illustration of the different causality assumption in this field of research. Export orientation may both be a cause and an effect of productivity.

Nevertheless, to enter the foreign market, small firms face a host of barriers; all are constraints that obstruct the firms' ability to initiate, develop, or sustain business operations in an overseas market. Leonidou (1995) distinguishes export barriers into internally and externally, or endogenous and exogenous factors. The internal barriers are associated with organizational resources/capabilities and the company approach to export business, while external barriers consist of all barriers derived from the home or host environment where the firms operate. Leonidou (2004) also identifies internal barriers as informational, functional, and marketing, whereas external barriers include procedural, governmental, task and environmental barriers. The extent to which these barriers affect

[4] Another scholar distinguishes a third hypothesis, the conscious self-selection hypothesis (Alvarez and Lopez, 2005). In conscious self-selection, a firm purposely increases its productivity to become an exporter. Productivity depends on the firm's decision to export. Expected higher returns from the export market motivate a firm to increase its productivity. Therefore, a firm prepares itself before entering the export market by increasing its productivity.

export behavior depends on the characteristics of firms, their management/organization, and environmental background. In addition, the barriers can be found at any stage of the export development process (Naidu and Rao, 1993; Barret and Wilkinson, 1985). Rutashobya and Jaensson, (2004) add another important factor: psychic distance.

Meanwhile, Egan and Mody (1992) note that entry barriers are part of a product's criteria – usually referred to as an 'inseparable triad' – that need to be met by their suppliers in terms of price, quality, and delivery. The price should be competitive without sacrificing quality and delivery, whereas quality should meet the defined standards; and delivery should be on time. While Egan and Mody (1992) place emphasis on the barriers in production capabilities, Roberts and Tybout (1997) state that critical barriers in entering the export market are the *sunk costs* of gathering information about the foreign market, establishing a marketing channel, and defining a product suitable for the new market. Apart from having limited resources and knowledge, small firms lack the ability to perceive risks and uncertainties in the market. Lall (1991) argues that the barriers vary by industry or product, but he points out the importance of marketing barriers. He distinguishes the barriers, viz. *pre-shipments* and *post-shipments*, the first of which consists of design, quality, production, packaging and presentation, shipping, and delivery. Post-shipment barriers consist of wholesaling, retailing, after-sales service, and brand name promotions. These barriers cover production capabilities and marketing capabilities that hinder small firms from entering developed countries' markets.

To face various barriers small firms need assistance from specialized agents (Leonidou, 2004). The role of foreign buyers in marketing small firms' exports is therefore critical, since it functions as the central agent for collecting and disseminating required information (Lall, 1991). Peng and Ilinitch (1998) suggest that small firms need not engage in direct exporting, so links to global intermediaries are necessary. Oviatt and McDougall, (1994) propose the use of an export agent, or specialist (representing an export department from several manufacturers in non-competitive lines) that connects domestic manufacturers and foreign buyers. They argue that using this intermediary is an efficient way to locate and negotiate with international customers due to their contacts, experience, specialization, and scales of operation. Other scholars emphasize the important role of global buyers as intermediaries who perform important functions in the international transactions. These intermediaries are lead firms in a global value chain (Gereffi, 1999[5]) mostly from

[5] Global commodity/value chain refers to the whole range of activities involved, from design, production, and marketing which is spread all over the world (Gereffi, 1999).

developed countries, usually having more resources, who understand the market, and are able to gauge the needs of foreign customers. A link to global buyers not only allows access to foreign markets, but also provides opportunities for upgrading.

Several theories, in particular the Uppsala stage model and international entrepreneurship theory, explain the internationalization process of firms. Meanwhile, in the internationalization process, exporting is the most popular entry mode for small firms. The barriers faced by small firms in exporting can be distinguished by production and marketing barriers, but linking to global buyers is one way for small firms to overcome these barriers and compete in the international market.

4.3 Global buyers and the global value chain (GVC)

This section explains foreign investment motivation (Section 4.3.1) and the global network model (Section 4.3.2).

4.3.1 Global buyer motivation

Traditionally, Multinational Corporations (MNCs) are the main actors in the international market. There are numerous theories on the behavior of MNCs, and we discuss three here: the theory of the growth of firms (Penrose, 1959), the internalization theory (Hymer, 1960, 1976), and the life cycle approach (PLC) (Vernon, 1966, 1979).

Theory of the growth

Based on Penrose's (1959) idea that growth could be obtained through finding new productive opportunities, Luostarinen (1979) argues that one reason for firm internationalization is that local and national markets are relatively small. Luostarinen (1979) and Bjorkman (1990) give an example of the Finnish paper industry; it entered the international market because the domestic market was limited but overseas markets were available. Growth of the firm is contingent upon both its external and internal factors. According to Buckley (1999), the role of management is central as it leads to a firm's success in the international market. Proper management includes availability of managerial skills, minimization of transaction costs, optimum size of scale of production plants at a particular location, state of technology, entry barriers, availability of finance, and balance between control and cooperation in the organization.

Internalization

Hymer (1976) explains that the rationale for the existence of the MNC is internalization. Firms internalize their operations due to the existence of imperfect markets (Dunning, 1995), and from this vantage point there are several reasons for internalizing activities: (1) to generate innovations and ideas and maintain exclusive rights to their use, as it is inside the control of the firm (Dunning, 1995); (2) to minimize risks and/or costs of fluctuating exchange rates, and to reduce the effects of unfavorable government policies (Rugman, 1980); and (3) to avoid intervention from public policy makers in the allocation of resources. In his Eclectic Theory, Dunning (1993) argues that a firm prefers direct investments in a foreign country if it can gain ownership advantages, location advantages, and internalization advantages. Ownership advantages relate to property owned by firms. A location advantage is obtained from the availability of inputs in a foreign country (which are scarce or too costly at home), or by acquiring access to the market, or by circumventing trade restrictions. Internalization advantages correspond to the ability of firms to reduce their costs and minimize the uncertainties of arm's-length transactions in the market by integrating business with suppliers or distributors.

The product lifecycle (PLC) approach

Vernon et al. (1996) explain that the emergence of international trade and investments relates to the product lifecycle. This approach assumes that a new product is usually designed and made in developed countries. A product undergoes different stages of a lifecycle distinguished by introduction, growth, maturity, and decline. During the introduction, a manufacturer is likely to focus on the home market for high income consumers, because at this stage the optimum design is still unclear, price sensitivity is low, and communication between the market and executive is direct and easy. When a dominant design is accepted and the production process is stabilized, the export market develops such that certain high-end customers will welcome the innovation and be willing to pay a premium price. Over time foreign demand will grow, the foreign market will advance economically, and exports will increase. As products become standardized, production shifts overseas and the innovating country becomes a net importer. Two important reasons to produce overseas are product maturity and standardization. One theory suggests that, as a product reaches maturity, its profitability can be increased by lowering the production costs – achieved by substituting cheaper overseas raw materials and labor (Drucker, 1980; Jacobs et al., 1997). Another theory maintains that, as a product

matures, production can be standardized, thus allowing for production to be manualized, which also permits the product to be made at a lower price overseas in developing countries (Sorenson and Wiechmann, 1975; Jacobs et al., 1997).

The theories mentioned above explain the behavior of MNCs involved in direct investment (foreign ownership). However, these theories cannot fully explain the current phenomena in the organization of international transactions. FDI is only one mode of entry for foreign firms apart from exporting, licensing, and participating in other strategic alliances, whereas MNCs are not the only international player, as there are many types of global buyers. Moreover, the current production structure or the global production network in which a global buyer operates has changed profoundly between the 20th and 21st century (Lawton and Michael, 2000). Global buyers can presently operate in many countries and need not establish their own factories.

4.3.2 Global/international production network

Global competitive dynamics in which the MNCs and other international firms operate, have changed because of the progressive liberalization and deregulation of international trade and investment. Through observation of the changes in dynamics, Ernst and Kim (2002) identify three interrelated transformations in the organization of international transactions: first, the growth of the global production network (GPN); second, the role of the network functions as a catalyst in international knowledge diffusion to offer opportunities for local capability formation; and third, a long-term process of digital convergence that increases rapidly in the transformation in the GPN and diffusion of knowledge. With regard to the role of global buyers in the global value chain, we will discuss the GPN model (Ernst and Kim, 2002) and subsequently the GVC approach (Gereffi, 1999).

Global production network model (GPN)

According to Ernst and Kim (2002), GPN is an integration of the dispersed knowledge of producers, suppliers, and customers into one global production network. The key player in this network is the ‘global production flagship’ (GPF). They distinguish between MNC and GPF, in which they compare the difference as being like computers with a stand-alone system and computers with a network system. The GPN covers intra-firm and inter-firm transactions and coordination. Firm participants in the supply network may consist of the flagship’s own subsidiaries, affiliates, joint ventures, subcontractors, suppliers, service

providers, and strategic alliance partners. The objective of creating this network is to provide flagships with quick and low-cost access to resources, complementary capabilities, and knowledge. In short, the aim of creating a global production network is cost saving. For a GPF, the GPN provides an opportunity to improve efficiency, sustain a quasi-monopoly position, generate market power through specialization, raise entry barriers, and increase network capacity for innovation. Meanwhile, for developing countries' firms, the development of GPN provides opportunities to strengthen local firm capabilities.

Ernst and Kim distinguish network flagships (or the lead firms) as 'brand leaders' and 'contract manufacturers,' whereas suppliers (or supply value chains) are classified as 'higher-tier lead suppliers' and 'lower tier suppliers.' A brand leader is a brand owner who connects manufacturing plants worldwide to supply products. Their suppliers are independent and involved in the supply network through a long process of certification in order to meet brand-owner requirements. The performance of a brand leader depends on its ability to combine cost reduction, product differentiation, and time in reaching the market. Meanwhile, a contract manufacturer is a lead firm in a production network that coordinates participants in vertical specializations and subcontractors in value product chains. A number of specific activities that have strategic advantages are conducted in-house.

According to Ernst and Kim, the higher tier lead suppliers play an intermediate role between global flagships and local suppliers. They deal directly with global flagships, possess valuable proprietary assets, and develop their own mini networks. Since they have their own mini networks, they are responsible for the coordination and management of a global supply chain. These firms must develop linkages between geographically dispersed firms and integrate them within their own networks. In contrast, lower tier suppliers do not deal directly with a global flagship but rather interact with higher tier lead suppliers. Unlike the higher tier lead suppliers, the lower tier lacks proprietary assets, has weak financial positions, and is highly vulnerable to change. Competitive advantages for lower tier suppliers rely on low costs, speed, and flexibility in delivery. Their role is price breaker and capacity buffer, but in the network they can easily be dropped.

Global value chain model (GVC)

Gereffi (1999) applies the GVC approach to describe the network set up by the global buyer. In this chain, the global buyer stimulates the dynamics of the global value chains. A

global value chain or global commodity chain[6] is an international economic network, referring to the whole range of activities involved in design, production, and marketing spread worldwide. He distinguishes these global commodity chains as producer driven and buyer driven commodity chains.

(1) *Producer driven* commodity chains are industries in which large, usually transnational, manufacturers are central to the coordination of the production network. These are typically found in capital and technologically-intensive industries such as automobile, aircraft, computer, semi conductors, and heavy machinery. In addition to earnings, product advancement, and the ability to apply control over backward and forward linkages are the key economic characteristics. According to Kaplinksy (2000), the lead firm relies primarily on technological rents and organizational rents[7]. The lead firm in this commodity chain is a global oligopolist

(2) *Buyer driven* commodity chains are industries in which large retailers, branded marketers, and branded manufacturers are pivotal in the set up of a decentralized production network in various exporting countries, typically located in the Third World. The chains are typically found in labor-intensive consumer goods industries such as garments, footwear, toys, house wares, consumer electronics, and handicrafts. Production is generally carried out by tiered networks of Third World contractors that make finished goods to foreign buyer specifications, and firms are highly competitive players in a globally-decentralized factory system. Using Kaplinksy's term, a lead firm in a buyer driven commodity chain relies on relational rents,[8] trade policy rents, and brand name rents.

The key differences between producer driven and buyer driven commodity chains are the actors who set the key parameters and control resources as well as the scope of the key parameters that are enforced. In producer driven chains, parameters are set by global firms:

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[6] In this Global Value or Commodity Chain (GVC or GCC) analysis, Gereffi regards the chain as a set of inter-organizational networks clustered around one commodity or product, linking firms in different regions and countries. Several terms usually used to describe a global value chain are a global commodity chain, a global value system, and a global production network or global value network (Gereffi et al., 2001: p. 2). Many scholars do not distinguish between the meanings of each term, but Gereffi et al. stress that each term is distinct and has its own emphasis. In a global value chain a lead firm coordinates and manages different activities.

[7] Technological rents arise from asymmetrical access to key products and process technology. meanwhile, organizational rents are a form of an intra-organizational process know-how involving new organizational techniques such as just in time, total quality control, and continuous improvements (Kaplinsky, 2000).

[8] Relational rents refer to techniques based on inter-firm relationships; trade policy rents refer to the scarcity value created by protectionist trade policies such as quotas; and brand name rents refer to returns from the product differentiation techniques used to establish brand name prominence in a major world market (Kaplinsky, 2000).

transnational corporations that control key products, and process technology. In buyer driven chains, lead firms who are agents, retailers, and brand name owners (so not always owners of production facilities) set the key parameters focusing on designs and marketing (Humphrey and Schmitz, 2001; Gereffi, 1999a). Between these two types of global activity network, buyer driven commodity chains – with many small firms – are currently widespread in developing countries. Furthermore, Gereffi identifies three noteworthy characteristics of buyer driven commodity chains. First is the role of lead firms who design the ordered branded products. Second is a separation between the design and marketing stages and the production of goods. Third, profit is derived from a unique combination of high value research, designs, sales, marketing, and financial services that allow the lead firms to function as strategic brokers.

Gereffi (1999) classifies global buyers into three groups: (a) *Retailers* are stores that sell directly to final customers. (b) *Marketers* are companies that sell globally without having their own factories. They deal with capable international contractors to supply their products. (c) *Branded manufacturers* are large manufacturers that produce their own products in cooperation with domestic producers' firms by providing intermediary input. These firms organize and manage the assembly processes of foreign firms; evidence from the apparel industry (Gereffi, 1999) shows that retailers and marketers buy readymade products or rely on a full package sourcing network, whereas branded manufacturers focus on assembly or further processing of unfinished imported products. These firms are the primary source of inputs, technology transfer, and knowledge.

The two organization types, GPN and GVC, are similar in that both coordinate dispersal/distribution activities when producing a product. However, GPN (usually involving large firms) stresses the actors in the network while GVC (utilizing small international firms) emphasizes the range of activities. GPN focuses on quasi-hierarchy governance while GVC handles various types of governance. Moreover, GPN are frequently used to explain many high tech based products such as electronic accessories production organization, while GVC explains various types of products, including traditional manufacturing or the natural resource-based sectors.

In this thesis, the focus of the study is on the link to GVC. Inserting to global value chain can be operationalized as being part of the global buyer network as supplier or other partner.

4.4 Small firm upgrading and governance in the Global Value Chains

As explained in Chapter 2, the barriers of developing countries' firms in acquiring access to foreign markets is due not only to incapable marketing (collecting and interpreting), but also to an inability to produce marketable products because with limited knowledge and technology, or barriers in production and marketing capabilities. Although continuous innovation or upgrading is required for small firms to be competitive in the international market, upgrading can effectively occur when small firms link with global players, since it is directly related to the market. This section describes the concept of upgrading and how it occurs by being inserted into a foreign buyer network.

4.4.1 Firm upgrading

Upgrading is defined as shifts in activities that sustain higher productivity (Humphrey and Schmitz, 2001). Tam and Gereffi (1999) clarify upgrading as a process of improving firms' ability to move to a higher added value, become more profitable, and utilize more sophisticated technology. Gereffi (1999) suggests that upgrading can occur both at the firm and the industrial level. Industrial upgrading works at several different levels. First, in factories, firms shift to higher value added activities, such as from cheap to expensive products, from simple to complex products, and from small to large orders. Second, within inter-firm enterprise networks, firms shift from a mass production of standardized products to a flexible production of differentiated products. Third, within a local or national economy, the industry shifts from simple assemblage of imported inputs to a more integrated OEM (Original Equipment Manufacturing) or OBM (Original Brand Manufacturing) production. Fourth, within regions, the industry shifts from a bilateral, unbalanced, and inter-regional trade flow to a more full intra-regional and integrated production.

In addition, at the firm level in order to upgrade (make better products), efficiency and higher skills are necessary. Humphrey and Schmitz (2001) place the term upgrading into several categories: process, product, functional, and inter-sectoral upgrading.

(1) Process upgrading: firms upgrade processes, transforming inputs into outputs more efficiently by reorganizing the production system or introducing superior technology.
(2) Product upgrading: firms upgrade by moving into more sophisticated product lines (which can be defined in terms of increased unit values).
(3) Functional upgrading: firms acquire new functions (or abandon existing functions) so that they increase the overall skill content of their activities. For example, they might

complement production with designing or marketing, or move out of low-value production activities altogether.

(4) Inter-sectoral upgrading: firms apply the competence acquired in a particular function of a chain to move into a new sector.

Other scholars classify the definitions above as a static concept, as the views stress only the shifts or changes without considering the position of the firm compared to other firms. The dynamic concept of upgrading is connected with the relative position of its rivals (Kaplinsky and Morris, 2000; Fleury and Fleury, 2001). These scholars argue that change does not always mean upgrading unless it will affect competitiveness. Kaplinsky and Readman (2000) define upgrading as more than merely the capacity to innovate, but also the ability to ensure continuous improvement in production and process development. In other words, the dynamic concept of upgrading is put in a relative position to their competitors, and upgrading is defined as an ability to innovate faster than their competitors. Furthermore, they emphasize that learning will not be valuable unless it results in a better competitive position for the firm. Fleury and Fleury (2001) define a firm as upgraded if:

1. There was an improvement in the competitive position of the firm: (i) relative to its previous position, (ii) vis-a-vis other firms, and (iii) catching up to the best performers in the field.
2. The changes were a consequence of an improvement in the firm's competence.
3. They wanted to increase discretionary power regarding other firms.

They distinguish upgrading from innovation, the former referring to a capacity to innovate faster than competitors. Moreover, with upgrading, continuous and sustainable innovation will occur because of purposeful action. However, the concept proposed by Fleury and Fleury (2001) cannot be applied easily, even though it is more advanced and represents the real firm's competitiveness from the management perspective.

4.4.2 Governance in the value chain

Ernst and Kim (2002) argue that the rationale for flagships to create GPN is to sustain their competitiveness by providing them with access to specialized suppliers at lower cost locations with excellent speed and flexibility in response to their requirements. Especially in their relationships with small firms from developing countries, they put considerable

pressure on local suppliers to meet all their requirements. Usually they discipline suppliers by threatening to drop them from the network when the local suppliers fail to meet the requirements. Therefore, by being inserted in the network, small firms are forced to produce world-class quality products efficiently and at low prices. It might happen that the pressure to decrease costs often makes many small firms take a low road strategy in order to remain on the boat.

In the meantime, GPN also performs as a powerful carrier of knowledge. In order to maintain competitiveness, flagships must transfer technical and managerial knowledge to local suppliers. Upgrading of suppliers in terms of technical and managerial skills therefore becomes necessary so they can meet the technical specifications of the flagships. Furthermore, network suppliers that can successfully upgrade their capabilities will motivate flagships to transfer more sophisticated knowledge, including engineering and product and process development. According to Ernst and Kim (2002) the knowledge transfer is not a sufficient condition for effective knowledge diffusion. It is completed when transferred knowledge is internalized and translated into local supplier capability.

Meanwhile, Schmitz (2004) argues that the upgrading prospect of small firms depends on the type of global value chain inserted or on the relevant governance. Humphrey and Schmitz (2001) define governance as *"a coordination of economic activities through a non-market relationship (network)."* The rationale for buyers to create coordination in their relationships with SME suppliers is to maintain their competitiveness in the international market. The significance of governance in a global value chain arose from a skeptical view about developing countries' capability to meet international standards in terms of price, quality, and delivery reliability. By linking with global buyers, these firms reduce the barriers to enter a developed country's market through access to market and technology (Gereffi, 1999; Egan and Moody, 1992). According to Humphrey and Schmitz (2001), governance has two purposes: (1) product definition, the criteria that should be met by suppliers and, (2) to protect losses from a failure in the supply chain. Buyers should guard themselves against a failure by suppliers to meet their requirements or commitments. If the criteria are not met, buyers will consequently lose revenues, thus resulting in damage to the buyer's reputation. Through governance, global buyers strive to ensure that suppliers fulfill their requirements and exercise control throughout the chain. Buyers set the parameters that outline what suppliers should do. The parameters having been set and enforced for certain products change over time, but global buyers consider them when determining

product criteria. For instance, many global buyers currently require their suppliers to apply social and environmental standards in their production process (Nadvi and Waltring, 2003).

In regard to the relationships between producers and global buyers, Humphrey and Schmitz (2001) outline four types of governance:

(1) Arm's length market relationship. Buyers and suppliers in this mode of governance are not in a close relationship. Buyers do not give a special commitment to their partners.
(2) Networks. In a governance network global buyers cooperate in an interdependent relationship with their suppliers; they share competence and interdependence. The relationship is close, and each has equal power.
(3) Quasi-hierarchy. In this mode of governance, the global buyer controls the operations in the chains by specifying the characteristics of the desired products, and sometimes the processes to be followed and controlled. In this relationship parties become subordinate, such as through a sub-contracting relationship.
(4) Hierarchy. In a governance hierarchy, the global buyer controls the operations of the chain by controlling the ownership.

Among these four types of governance, a quasi-hierarchy is mostly found in the relationship between global buyers with producers from developing countries. This relationship is costly; it requires asset specificity investments in the relationship with a particular supplier, which increase rigidity concerning the cost of switching suppliers. However, this relationship also opens opportunities for small firms to upgrade.

4.5 Linking to a GVC, upgrading, and performance

This section describes some experiences of clusters and firms that link to the international network (Section 4.5.1) and how they relate to performance (Section 4.5.2).

4.5.1 Linking to GVC and performance

Scholars use various ways to illustrate the advantages of being inserted into global value chains. Most agree that this link results in upgrading, so that the firms are able to compete in the international market, which, in turn, increases their performance. However, rarely do studies discuss the impact of GVC on the firm performance of individual firms. Below are a number of examples.

As described in Chapter 1, the evidence of upgrading and improvement in the cluster performance are found in the Torreon cluster in Mexico, ever since the global buyers

increased their involvement in it (Bair and Gereffi, 2001). Upgrading also occurs at the firm level, in which many firms enhance their capabilities in dealing with the production process. There is no information about the impacts of upgrading on the performance of firms, but evidence shows that upgrading increases the maximum number of garments produced per company in 1993, 1998, and 2000. Besides being able to handle a full package of blue jeans production, several firms have developed direct links to the export market, allowing these firms to receive more profit from this involvement.

In the Sialkot cluster in Pakistan the evidence of upgrading in the cluster is also evident by the increase in quality that leads to increased production and export of surgical products (Nadvi, 1999). Being affiliated with global buyers provides access to technical know-how and improvements in quality, so that clusters can increase foreign market coverage. The connection with foreign buyers also allows access to the assistance and training in quality control and production. Buyers are the primary source for new product ideas, product development, and technical and marketing information. The study shows that cooperation is highest with foreign buyers, and significantly impacts on firm performance. When compared to cooperation with suppliers, subcontractors, other firms, and trade associations, the impact of cooperation with buyers on firm performance is the strongest.

Tokatli's (2007) study on the blue jeans industry in Turkey provides evidence that upgrading is found within the blue jeans industry as firms are inserted into the global value chain. In this GVC, Turkish firms are involved in contract manufacturing for foreign buyers from Germany, the USA, France, etc. Many Turkish manufacturing firms not only engage in full package production for a diversified list of brand name jeans, but also experiment with functional upgrading by developing their private brands. Moreover, many firms are involved in the higher value added activities such as design, marketing, and retail. Regrettably, Tokatli's study does not examine the impact of upgrading on firm performance.

A study on fresh vegetables from Africa, shows the upgrading from the producers who have linked to UK supermarkets (Dolan and Humphrey, 2001). Relationships with Zimbabwean and Kenyan producers and processors are a quasi-hierarchy, in which the lead firms establish parameters to be followed by firm suppliers relative to cost, quality, delivery, product variety, innovation, food safety, and quality systems. Firms' abilities in this relationship increase sufficiently to meet international standard requirements. The performance also improves as shown by the increase in production and exports, since they

are linked to supermarkets in the UK. Similar to the Turkish study, the African study ignores the impact of the link on firm performance.

Upgrading is also found with the small coffee farmers in Honduras, as they are involved in GVCs (Fromm and Dubon, 2006). Most of the producers are engaged in product and functional upgrading. The international standard requirements cause producers to try very hard to comply with the requirements. Apart from the process, the farmers also upgrade in the products they are encouraged to produce for a differentiated coffee market, thus giving better value added. However, this study neither examines the impact of upgrading on firm performance.

In the case of Latin American clusters, Giuliani et al. (2005) explore whether and how small firms participate in the global market and maintain sustainable growth. An analysis was conducted based on 40 firms from 12 different clusters and four types of clusters (traditional manufacturing, natural resource-based sectors, complex products industries, and specialized suppliers clusters). They focused on the relationship between governance in the global buyer's chain relationships with upgrading, which is different for each sector. This study also ignores the impact of upgrading on performance.

Most scholars agree that linking to the global value chain initiates upgrading whereby producers' capabilities increase, but they do not discuss the impact on performance at the firm level. Among the examples cited above, only Nadvi (1999) shows the effects at the firm level. Global buyers will be happy when producers are upgraded, as it improves global buyer competitiveness, so many do provide assistance or support producers. However, global buyers will support upgrading in the process and products but not beyond, because in so doing, it may conflict with their interest as intermediaries (Schmitz and Knorringa, 2000). In the meantime, the pressure of world competition frequently makes global buyers increase the barriers, thus causing firm suppliers to work harder to comply the requirements.

4.5.2 Foreign ownership and firm performance

Asheghian (1982) found that foreign owned firms perform more efficiently than local firms, since they have better experience in technically-oriented production, pay higher wages and benefits, have better supervision, training, and research, and are superior in management processes and technology. Many other studies assess the performance of MNCs, and major findings support the previous statement that MNCs perform better than the domestics (Hughes, et al., 1987, Kumar, 1984). According to Grant (1987), the reasons

for MNCs' better performance are due to their firm-specific assets that can be exploited in foreign countries such as technological know-how, ownership of brand name, various managerial and organizational skills, market power useful in facing competitors in foreign markets, ability to undertake risky activities, and the ability to exploit a wide range of investment opportunities. Although foreign-owned firms are not always MNCs, they share several characteristics.

From the explanation above, we can conclude that linking to an international network is important, as it is the ground spring of competitiveness. While the majority of evidence supports the relationship between foreign ownership and performance, evidence on effects of firm performance through a connection with global buyers is still limited.

4.6 Conclusion

The internationalization theory has been developed to explain the behavior of small firms, but is not yet fully able to explain the behavior of small firms from developing countries that face numerous barriers. The two main ones are production and marketing capabilities. Because of these limitations, linking to global value chains is a critical way for small firms to gain access to markets (particularly to developed countries' markets), to upgrade, and ultimately to compete in the international market.

According to the global value chain model (GVC), the extent to which the capabilities can be obtained depends on the form of governance in which the local firms are inserted. Among various forms of governance, the quasi-hierarchy provides the best opportunity for small firms to obtain these capabilities. This governance is found in GPN, and comprises the products, processes, and logistic parameters followed by firms' suppliers. However, being inserted into this network requires a certain level of endogenous capabilities and resources. Moreover, by being inserted in a GVC, firms are compelled to provide products at lower prices. Global buyers seldom want to upgrade beyond production in order to provide better value added, since it may threaten their position as intermediaries.

Chapter 5

Integrated Framework

5.1 Introduction

As discussed in Chapter 2, internal firm resources are regarded as important determinants for firm performance. Small firms that are constrained by limited resources are advised to take benefits from external firm factors in order to enhance their competitive advantages. In Chapters 3 and 4, several theories were discussed each suggesting different external sources of competitive advantages exploitable by small firms. For instance, the cluster theory stresses firm proximity, which provides external economies and joint action, whereas the global value chain approach emphasizes linking to an international buyer. The cluster literature recommends utilizing local resources in the cluster, while the global value chain literature supports upgrading through linking to global buyers. In this chapter we develop an eclectic research strategy by combining the three approaches to properly describe the determinants of firm performance.

For that aim, Section 5.2 gives a brief description of cluster and global value chain approaches. Section 5.3 examines similarities and differences between the two approaches. Section 5.4 describes an integrated model to explain firm performance, while Section 5.5 concludes.

5.2 Cluster theory versus. global value chain approach

As previously discussed, the literature on strategic management emphasizes the importance of a firm's resources as the source of competitive advantages that determine performance. Among these resources are marketing strategies, and firm / entrepreneur characteristics.

However, small firms have limited resources which constrain their performance. To overcome this limitation, as elaborated in Chapters 3 and 4, small firms are encouraged to take benefits from opportunities available in the external environment by clustering or collaborating with foreign partners.

The discussion of the cluster theory in Chapter 3 stresses the vital role of collective efficiency (proximity and local cluster networks); it suggests that the upgrading of firms in a cluster can be achieved by mobilizing locally available sources. The competitive advantages of locality arise from agglomeration economies and a combination of rivalry and cooperation between local enterprises, public partnership agencies, and private organizations in their support of local firms (Schmitz, 2003). Local upgrading strategies are effective when built through strong linkages between local enterprises and institutions. However, local policy networks can help local enterprises in industrial districts to become competitive, but their positions differ from those of developed countries. Moreover, most of these institutions have insufficient knowledge of the needs and wants of consumers from developed countries. The benefits and disadvantages of clustering are described in Box 5.1 by means of some examples.

Box 5.1 Benefits and disadvantages from industrial clusters

In the Sialkot industrial cluster the local institutions, private or government, play important roles in increasing the capabilities of the entrepreneurs and their workers. Joint action that has increased through greater local cooperation among producers and producers with their suppliers and subcontractors has succeeded in upgrading the cluster to increasing international quality standards. According to Meyer-Stamer (2003), through clustering, several barriers faced by firms have decreased, such as barriers in competence building, as firms become increasingly specialized; barriers in exporting, as they work jointly in the export consortium; and barriers in upgrading, as the agglomeration creates a strong demand for business development services. However, not all aspects have improved to support the quality assurance standards.

Collective action is an important strategy for overcoming critical problems faced by a cluster, as shown by the tile industry in Santa Catarina, Brazil (Meyer-Stamer and Seibel, 2002). Collective action helps this cluster overcome severe problems by applying technical standards and technological upgrading, and lobbying the government to force the construction sector to increase their demands. However, collective action declines when the objectives of collective action are achieved. Meyer-Stamer and Seibel argue that upgrading based on local sources has several potential disadvantages: (1) Mobilizing cluster advantages is more difficult as it involves various management issues, while management skills to deal with these aspects are not always available in the cluster. (2) It is not easy to encourage the participation of stakeholders if they cannot be convinced that the benefits of their involvement are significantly greater than the cost outputs. (3) Restructuring value chains is an option for collective action, especially when the costs and risks of collective action increase.

The cluster theory has limitations because it places emphasis on the local scale and neglects global economic issues. The idea of the global value chain (GVC) theory is that each function in a chain of activities is carried out by different enterprises that are often

located in different places. Firms are rarely involved in all functions, such as design, processing of raw materials, making the finished product, and marketing it to final customers. This theory recognizes the role of global buyers in creating global production and marketing networks. The theory emphasizes the role of powerful lead firms that undertake the functional integration and coordination of internationally-dispersed activities and governance structures. By linking to global buyers, local producers, especially new producers, gain knowledge about international producers, as they learn how a product is processed, how to maintain consistent and high quality products, and how to increase the speed of response. However, the scope of upgrading depends on the type of upgrading and the type of global value chains into which the cluster feeds. Box 5.2 presents some of the benefits and disadvantages of linking to international networks based on some examples.

Box 5.2 Benefits and disadvantages of linking to the international network

The experience of a tobacco cluster in Rio Pardo Valley Brazil (Vargas, 2000) shows the dependence of local producers and other local participants on foreign actors, although it coincided with an improvement in performance. Historically, producers and other local participants were involved in production, processing, and trade, but the involvement of MNCs, which links local tobacco producers with the global tobacco production network, limits the role of local players in this upgrading. Although some initiatives emerged from local participants, the asymmetric power maintained global buyer control in the development of the cluster. In the cases of a horticulture firm in Kenya and a garment industry in Tamil Nadu (Dolan and Tewari, 2001), they show an increase in their competitive positions in the international market by producing more efficiently, developing new and innovative products, and extending the range of their activities through forward and backward linkages. However, local production is improved only in product and process upgrading, since control of brands, design, and distribution is commenced by a limited number of global buyers. This evidence demonstrates an increasing dependence of local producers on global buyers. Moreover, improvements in capabilities only occur in firms that are inserted in the global value chain network, and where the knowledge does not diffuse to other firms in the cluster.

In contrast to cluster theory, a limitation of the global value chain theory is that it emphasizes the role of global buyers (global value chains) and neglects the role of domestic buyers (national value chains), located outside the cluster. Inserted in a quasi-hierarchy, global chains help local producers to upgrade in terms of process and product, but they are hampered in terms of functional dimensions. This disadvantage is less likely to be manifest in a non-hierarchical relationship between global buyers and local producers, but this relationship is rarely found in developing countries. Furthermore, upgrading requires substantial investments by the local producers and support from local institutions. This approach ensures a good learning process, but external buyers define the product, moreover, involvement in the global network requires local producers to invest in people and equipment.

From the explanation above, we can conclude that both theories stress different external factors as the sources of a firm's competitive advantages. Therefore, we suggest the combination of the internal factors, the cluster factors, and the global value chain framework in order to enhance a firm's competitiveness.

5.3 Similarities and differences of theories

This section describes similarities and differences of cluster theory and the Global Value Chain approach. Humphrey and Schmitz (2002) identify differences between the cluster theory and global value chain theory that are summarized in Table 5.1.

Table 5.1 Governance and upgrading: cluster versus. value chains

Dimension	Cluster theory	Global value chain theory
Governance within the locality	Strong local governance characterized by close inter-firm cooperation and active private and public institutions.	Not discussed; local inter-firm cooperation and government policy largely ignored.
Relation with the external world	External relations not theorized or assumed to be based on arm's length market transactions.	Strong governance within the chain; international trade increasingly managed through inter-firm networks.
Upgrading	Emphasis on incremental upgrading (learning by doing) and the spread of innovation through interaction within a cluster; for major upgrading initiatives, local innovation centers play an important role.	Incremental upgrading made possible through learning-by-doing and the allocation of new tasks by the chain's lead firm; discontinuous upgrading made possible through any kind of organizational effort allowing entry into more complex value chains.
Key competitive challenge	Promoting collective efficiency through interactions within the cluster.	Gaining access to chains and developing linkages with major customers.

Adapted from Humphrey and Schmitz (2002, p. 1019).

Literature on industrial clusters emphasizes the role of inter-firm cooperation and local institutions (or local networks) in enabling upgrading. It stresses the importance of local level governance and the role of incremental upgrading through interactions between firms with local institutions. Meanwhile, the global value chain literature emphasizes the importance of value chains through which required knowledge is transmitted. The global value chain literature focuses on the role of global buyers and chain governance in defining upgrading opportunities.

With regard to governance, the differences in the two approaches are reflected in the actors involved in each type of governance, summarized in Table 5.2.

Table 5.2 The type of governance in the two approaches

Type of governance	Cluster theory	Global value chain theory
Private governance	Local business association Hub-and-spoke cluster	Global buyer driven chain Global producer driven chain
Public governance	Local and regional government agencies	WTO rules National and supranational rules with global standing
Public-private governance	Local and regional policy networks	International standards International NGO campaigns

Adapted from Humphrey and Schmitz (2002, p. 5).

Both approaches fail to address the questions on governance and how upgrading dynamics of the clusters inserted into global value chains can be accomplished (Humphrey and Schmitz, 2001). In the case of an export-oriented cluster, it could be beneficial to bring together the two perspectives when analyzing cluster development. By linking to global value chains, knowledge will flow from lead firms to local producers and the potential for rapid diffusion of knowledge will be enhanced. Local institutions can support the cluster by expanding infrastructure and strengthening training, testing, and certification facilities.

Putting these two perspectives together, however, not only combines the strengths but may also reveal the contradictions between them. In the case of Torreon, the presence of global buyers improved the relationship between foreign buyers and their local producers, but at the same time lowered cooperation horizontally and thus the level of trust. Foreign customers prefer to work in exclusive relationships with local producers or with local producers who do not also work with their competitors. Producers are generally more loyal to their foreign customers, so that cooperation among local producers declines or is difficult to promote. Moreover, supporting institutions, such as trade associations and industry-specific training programs, may not have much influence in the cluster where the role of foreign buyers is dominant (Bair and Gereffi, 2001). We observe therefore, that the institutional environment characterizing a cluster with foreign domination differs from the industrial districts model.

In order for local and global dimensions of networks to be simultaneously conducive to performance, the support of all actors is needed. Active engagement in risky investments in order to improve capabilities while trying to reach new markets, or reach old markets in

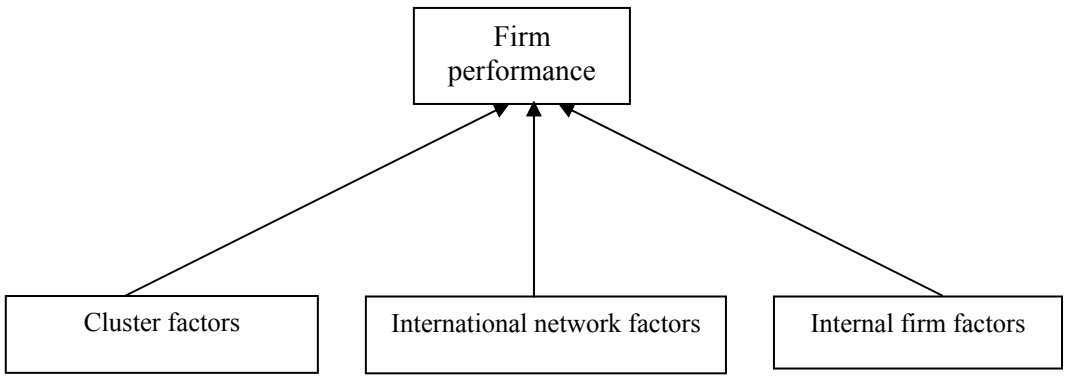
new ways is encouraged. Building a coalition of key actors in the public and private sectors is also a critical success factor, in that radical products or functional upgrading can be more easily initiated via local industrial policy. Business associations (collective actors) with their expertise and ability to mobilize political and financial support are essential players. Regarding this aspect, Messner (1997) calls for the building of local/global networks across countries. Moreover, Schmitz (2000) suggests that, for joint action to develop, a cluster not only should rely on a private collaboration of local firms, but needs also to create public agencies with the capability of mediating relations between companies in the cluster. They stress the important role of value chains in cluster upgrading, at the global as well as national level, particularly for clusters located in a high-potential domestic market.

To solve contradictions of the approaches, Humphrey and Schmitz (2001) suggest two steps: (1) To distinguish between different forms of governance in global value chains and recognize reasons why they exist, and (2) To understand the ways in which competencies are acquired at the firm and cluster levels. From this, the effects of both global and local linkages at various levels can be understood.

5.4 Towards an integrated framework

This section presents an integrated model combining three dominant factors that affect firm performance. The three factors are visualized as a conceptual model in Figure 5.1.

Figure 5.1 The conceptual model



The three factors affecting firm performance are internal firm factors, cluster factors, and international network factors. This framework will be used to explain the firm performance of the wood furniture industry in Central Java, Indonesia, in Chapters 7 and 8. Chapter 7 provides an examination of the impact of the three dominant factors on firm performance

based on large and medium-sized (L&M) firms in Central Java Province (Case 1). Meanwhile, part 1 of Chapter 8 investigates the effects of the three dominant factors on firm performance of L&M firms from four wood furniture clusters: Jepara, Klaten, Sukoharjo, and Semarang City (Case 2). Part 2 of Chapter 8 examines the impact of internal factors and cluster factors on small firm performance of the Jepara cluster. In this part, we also compare the impact of the two factors on small firms with Jepara L&M firms (Case 3). Therefore, we examine the impact of cluster factors and firm / entrepreneur characteristics on the performance of both small firms and L&M firms.

The indicators for each variable used in each chapter are discussed in detail in the respective chapters. In the first case, the cluster variables are represented by clustering of specialized firms and clustering of diverse firms, whereas the second and third cases are represented by external economies, local cooperation, and competition. The international network in the first case is represented by exporting or non-exporting involvement and foreign ownership, whereas in the second case it is represented by foreign buyer cooperation and asset specificity. Since most small-scale firms do not have foreign buyers, this factor is not included in the third case. In addition to these two main factors, internal firm factors are also significant. Due to limited data, however, this factor is excluded from the first case, but in the second case, these factors are represented by marketing strategies and firm and entrepreneur characteristics. Since many small firms do not have marketing strategies, only firm and entrepreneur characteristics are included in the third case. Statistical methods were used to estimate the parameters. The operational models for the three cases are schematically-described in Figures 5.2 and 5.3.

Figure 5.2 The operational model for firm performance, a production value approach (Case 1)

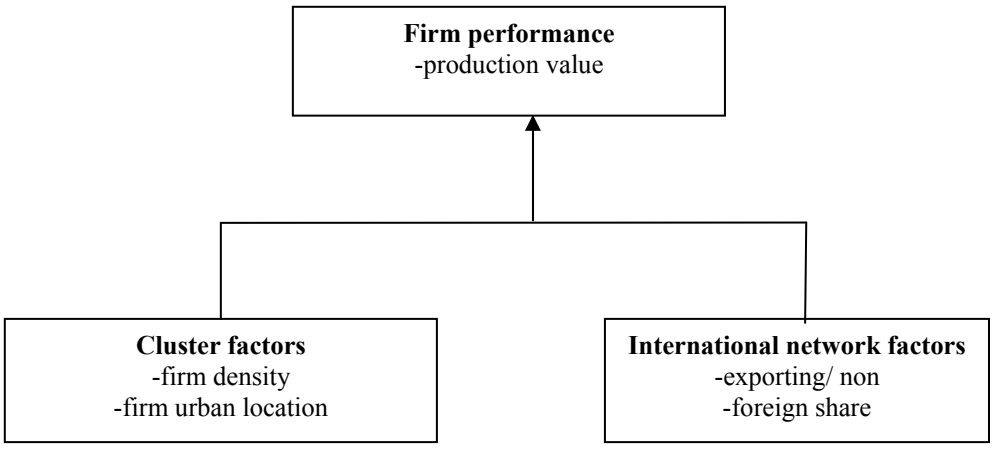
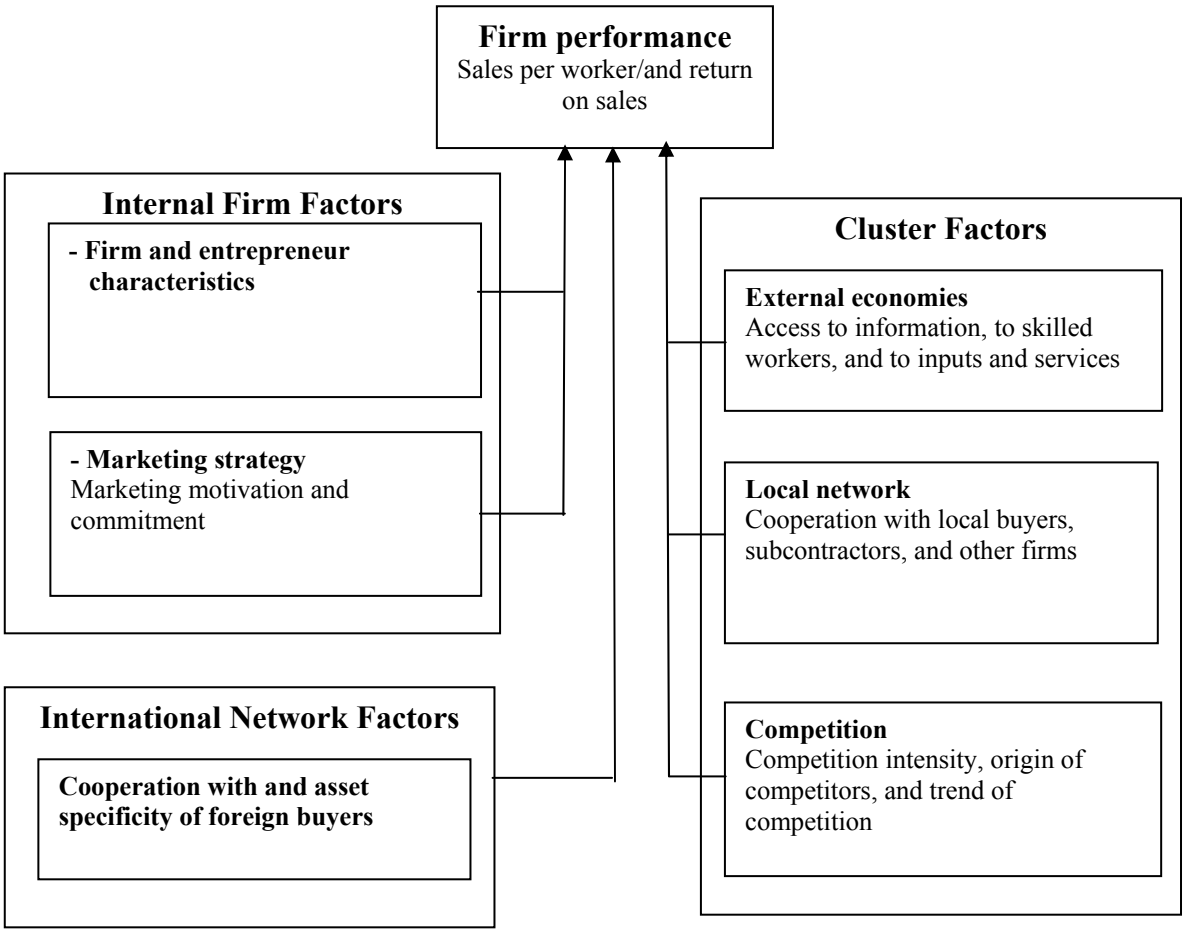


Figure 5.3 The operational model for firm performance, an economic approach (Case 2 and 3)



Before turning to the empirical analysis in Chapters 7 and 8, we need background knowledge on the Central Java wood furniture sector. For this purpose, we first provide a more detailed description of the Jepara wood furniture cluster as the leading furniture cluster in Central Java as presented in Chapter 6. The description of Jepara starts with the historical development of the cluster, the driving factors behind its development, and the trajectories of the cluster from 1988 to 2005.

5.5 Conclusion

The integrated model presented in this chapter combines elements from three theories on competitive advantages or firm performance. The first theory addresses the role of internal firm factors; the second theory highlights the importance of cluster externalities to improve firm performance; whereas the third theory accentuates the significance of cooperation with foreign buyers in order to increase firm performance. Thus, the main elements of the

integrated model are internal firm factors, cluster externalities, and linkages to international networks. This framework will be used to examine firm performance of the wood furniture cluster in Central Java, Indonesia.

PART II

Empirical Analysis

Chapter 6

The Dynamics of the Jepara Wood Furniture Cluster: an example of the advanced cluster in Central Java[9]

6.1 Introduction

We discussed in Chapter 3 that in order to compete in a foreign market, an industrial cluster can offer ways to enhance small firms' competitive advantages, as clustering provides external economies and potential cooperation among firms. Meanwhile, Chapter 4 argued that, in order to improve competitive advantages, small firms need to insert into a global buyer value chain, because insertion provides opportunities for upgrading. Both approaches are integrated in Chapter 5 and used to explain the performance of wood furniture firms in Central Java in Chapters 7 and 8.

In Central Java, there are several wood furniture clusters, but not all can be considered as mature. Among the mature clusters, Jepara leads, with predominantly small scale firms and full access to a dynamic market. Some scholars claim that the Jepara cluster is a successful Indonesian cluster (Schiller and Schiller, 1997; Alexander and Alexander, 2000; Sandee et al., 2000), while recent studies are less sanguine about the development of the Jepara cluster (Posthuma, 2003; Loebis and Schmitz, 2005; Watzema, 2005). Nevertheless, as the leading cluster in the wood furniture sector, Jepara is frequently used as a benchmark to assess other clusters. The Jepara cluster emerged in the 16th century, grew to the mid-1980s, reached a maturity stage in 1999 and 2000 but tended to decline afterwards.

[9] In developing this chapter, various kinds of information are used; either they are from secondary sources or are received from primary sources such as producers, traders, officials, consultants, etc. To get an idea about the cluster, we present some pictures on the local wood furniture market, a wood trader, production activities in large firms and small firms, and the carving process at the end of this chapter.

An important question arises as to which trajectories the Jepara cluster tends to follow and what shapes them.

In order to provide an idea of this advanced cluster, this chapter portrays the dynamics of the Jepara cluster in more detail. The structure of this chapter is as follows. We present in Section 6.2 a brief description of location, economic aspects, historical context, and social conditions of the Jepara cluster. Section 6.3 deals with the development of the wood furniture cluster. Section 6.4 describes the international context. Section 6.5 outlines the role of small firms, while Sections 6.6 and 6.7 discuss government policy and innovation in the cluster. Conclusions follow in Section 6.8.

6.2 Locational and historical context

This section gives a brief description of the location and economic aspects, and the historical and social conditions of the Jepara cluster. For the map of Jepara, I refer to page ix of this thesis.

6.2.1 Locational context

The Jepara district is situated on the northern coast of Central Java, Indonesia and is 1,000 km^2 in size. In the 16^{th} century this area was a primary commercial center in Java. Although the Portuguese dominated trade during this period, as Princess, Kalinyamat once tried to kick out the Portuguese from this area. When the Dutch entered Indonesia, Jepara further developed. However, the role of this commercial center declined after the Dutch burned the town to the ground because the local leader had violated the Dutch trade monopoly. When Indonesia gained independence, Jepara was only an administrative center, in which agriculture and fishing were the most prominent economic activities. There was also a furniture sector based on a long tradition of craft work, but at that time it was not very dynamic. Until the late 1970s, Jepara was considered as one of the poorer districts in the Central Java province.

The growing Indonesian income per capita along with a renewed appreciation for the traditional style of furniture, led to a slow but steady revival of domestic demand in the 1970s. Impressive growth began after foreign buyers entered the cluster and began to export directly from Jepara. The rise of the industry developed wood furniture production as the backbone of this regency, as it contributed the largest employment and export revenue in the region and changed the Jepara economic structure. In 2005, the population of Jepara was about 1 million. Out of the 700,000 working age people, almost 52% were

employed in the agricultural sector. Meanwhile, the industrial sector provided employment for about 200,000 people, with about 30% working in the wood furniture industry; wood furniture is the main product from Jepara and is sold at the national level as well as in the Central Java province. In terms of international trade, furniture is sold to 68 countries. In 2005, the wood furniture industry contributed about 30% to the Jepara GRP (Gross Regional Product).

6.2.2 Historical and social conditions of the Jepara cluster

The Jepara wood furniture cluster has a long tradition which has developed from the carving hobby of a group of people from "Belakang Gunung" (behind the mountain) village, who served the household needs of the royal family. Because only small amounts of capital were needed, this hobby eventually expanded throughout neighborhoods and across the whole village. It evolved into an industrial cluster, dominated by relatively small and non-mechanized household-based workshops. During her reign, Princess Kalinyamat championed the growth of this sector, but it later became stagnant. It grew again during the life of Kartini (1879 to 1904), the Indonesian emancipator for women, but it again withered. Details on its history can be found in Box 6.1.

Box 6.1 The legend, history, and upgrading

The legend of artistic carving in Jepara tells the story of Prabangkara, a carver and painter, who lived during the dynasty of King Brawijaya of the Majapahit Kingdom in East Java. To express his deep love for his very beautiful wife, the King asked Prabangkara to make a nude painting of her. The finished painting depicted perfectly every part of his wife's body, even parts that were covered by cloth. This made the king suspicious. Burning with jealousy, the King wanted to get rid of Prabangkara by playing a trick on him. The King tied him and his tools to a flying kite and cut off the string when the kite was in the air. Then Prabangkara tumbled down to the ground and landed in a village called "Belakang Gunung," which means "behind the mountain" and is near the town of Jepara.

Jepara carvings were recorded only after the rule of Queen Kalinyamat in 1549. The Queen, whose maiden name was Retno Kencono, contributed to the development of the artistic carvings. In her kingdom, there was a minister named Sungging Badarduwung, who was from Campa (Cambodia) and was a good carver. The Queen built Mantingan mosque and Jirat mausoleum (a grave for her husband), and asked the carver to beautify these buildings with carvings. Even today, the carvings can be seen in the mosque and the mausoleum that were built in the 16th century. In the mosque are 114 reliefs on white stones. At that time, artists did carvings to fulfill the needs of the families of the Kingdom.

Kartini gave the carvers schooling about how to produce marketable carved products. Their carved products were sent to Batavia and Semarang, and some even went to Holland. After deducting the sales revenue from the cost of the raw materials, production, and transportation, she returned the rest to the artists. As the quality improved, many orders were made, thus enabling the business to expand. The carvers designed all traditional household products themselves, as Kartini always emphasized the importance of design competence. The role of Kartini was very important in upgrading the carvers' skills, in which she stressed not only the importance of improved designs, but also technical production capabilities, understanding the market, marketing, and financing. In design and product development, she encouraged carvers to think about the functional aspects of products.

Box 6.1 Continued

In homage to Kartini's dream to develop the art of carving, on July 1, 1929, a carpentry school named "Openbare Ambachtschool" was established. In order to help carvers concentrate on production, in 1932 the local government established a community-owned company called "Jepara's Houtsnijwerk En Meubelmaker," which employed student graduates (Jepara Tourism Office, 2003). However, due to unprofessional management, this company went bankrupt after only several years in operation. A follow-up community-owned company was established, but it too went bankrupt for the same reason.

There was no significant upgrading of local carvers after the period of Kartini and before foreign buyers entered Jepara. During this stagnant period, domestic traders sometimes gave non-specific input about the products or processes to wood carving producers, but their customers were not demanding. It was not until the opening of special outlets in the latter 1970s, in several large cities in Java and Bali, that some foreigners became interested in commercial production. The commercial process started slowly; only small quantities of furniture were shipped to foreign countries, and quality improvement was very slow.

The Jepara wood furniture industry is unique in that it developed from household-based enterprises. The role of kinship ties is therefore significant in the internal organization of small firms/workshops and in establishing the contracts in the production-chain linkages. In many small firms, informal partnerships between a husband and wife are frequently found, also a son, daughter, brother, brother-in-law, etc. worked together on a temporary basis, as they expected to someday open their own firms and become subcontractors (see the detail in Box 6.2). A kinship-based relationship also appears in the production chains, in which some orders are given to relatives. The relationship between firms and subcontractors can be divided into two groups: langganan (regular customers) and bapak/anak angkat (foster father or foster child). These two terms imply two different relationships with subcontractors. The relationships in large firms with their subcontractors are hierarchical, but are less so in small firms. Most producers know other producers in the same village or sub-district, as they are neighbors. News about a contractor who defaults on payment to his subcontractors will spread to the whole village.

As emphasized in the cluster literature, the important role of the local social milieu is a relevant factor in the development of a cluster, even more for developing countries, as it influences inter-firm relationships (Schmitz and Nadvi, 1994). In the case of the Jepara cluster, the social cultural background provides a favorable condition for the growth of the industry. The existence of small scale firms and household producers, combined with local culture, can easily respond to market opportunities resulting from globalization.

Box 6.2 Family and firms

Usually the workshop occupies half of the house and employs relatives and some neighbors. As firms grow quickly, non-relatives' workers come from outside of the village, but the producers usually provide them with a place to sleep in their houses. There are no formal working hours, so producers and their employees can work more than 8 hours a day to meet the deadline of an order. In the daily operations, the husband concentrates on production while the wife handles the administrative aspects such as accounts and bookkeeping, employee payments, and orders. Although wives are not always skillful in bookkeeping, this partnership becomes an efficient way for a firm to solve managerial problems in a fast-growing industry. It is costly for small firms to employ a worker to deal with administrative matters. Moreover, the complicated cash flow needs someone trustworthy, as it opens opportunities for fraud. The wife can also make quick decisions about minor problems without having to wait for the husband to be present. Another partnership between spouses is that the wife buys products from the husband and resells them in her small store or to other buyers. It is also frequently found that a husband and wife run different wood furniture workshops, but they cooperate to fulfill orders or share recourses. Besides the wife, family labor, particularly women and children, are employed; many of them do not receive payment.

The characteristics of this cluster allowed small scale firms to operate more efficiently, and to offer lower prices than larger firms through integrated production. Alexander and Alexander (2000) describe the relationship among small firms as creating an efficient and flexible production system that contributes to the success of the cluster. They argue that the important aspects in this system are (1) the use of a market rate system for all firm transactions, (2) the use of a payment system in terms of deposits or advanced payments, and (3) the structure of the production chains that facilitates innovation in product and production methods.

To summarize, historical and social conditions in Jepara are important in the development of the cluster. Although market forces are critical, the cultural and social factors create a favorable environment for the dynamic responses of the cluster. However, the advantages from the social conditions during the growth period seem to be insufficient to adapt to changes in the business environment. The increasing competition requires increasing quality, better designs, and punctuality in delivery. In some aspects, the social conditions cannot coincide with the development in market demand, and this factor is discussed further in Section 6.5.

6.3 The development of the Jepara furniture cluster

6.3.1 The structure of the Jepara wood furniture cluster and the exports

The Jepara industry consists of four groups of firms: first are micro-scale firms, in which the number of these firms is not precisely identified; second are small scale producers, which cover about 96% of the total firms recorded by the local government office (BPS, 2002). The third group is medium scale firms, which comprise about 3.4%; while the

fourth is large firms, at about 0.6%.[10] Unlike most businesses in Indonesia, which are dominated by Chinese, indigenous Javanese (about 90%) dominate the wood furniture industry in Jepara. Schiller and Schiller (1997) argue that this structure is due to the craft nature of the industry, the low capital start-up requirements, the importance of carpentry carving skills, employment flexibility, and human relation skills necessary to deal with the rather independent Javanese artisans.

The producers segment their products into indoor furniture and outdoor furniture. They frequently also segment their products according to type of raw material used: teak and non-teak. Teakwood is still used primarily for the domestic and export markets, followed by mahogany. However, the price of wood (particularly teak) is increasing over time. In 2000, the price of teakwood was about four times the price of non-teakwood. In 1979 timber made up about 40% of the production cost; in 1990 it was about 48%; in 1996 about 50%; and in 2006 between 60%–75% of the production cost. Perhutani, a government-supported company responsible for wood management, sells most of the teakwood under the bidding system. Perhutani grades the timber by size and quality and sells the rest directly to small firms. The bidding system therefore frequently causes problems for small firms as they receive a lower quality wood. Besides Perhutani, wood is also planted in private plantations and sold in the market, but again the quality of wood from private plantations is lower. The decreasing supply of wood, especially teak, meant that many firms subcontracted the complete products. Through subcontracting, the contractors overcome difficulties in attaining raw materials, but frequently their subcontractors use illegal wood. In addition to raw materials, many shops in Jepara sell various kinds of inputs. There are also suppliers of specific inputs that visit Jepara frequently as well as many rental services for sawmills or dry kilns available. Despite private services, the local government established technological centers to provide these services. Through their assistance programs, local government also donated machinery to certain self-help groups.

Some of the above situations support the Jepara cluster in serving the export markets. Regarding the wood furniture exports, there is no available data indicating when exactly Jepara started its direct exports. Some researchers say it started in 1986 (Schiller and Schiller, 1997; Alexander and Alexander, 2000) with a value of US $30,000, but author interviews indicated that direct exports from Jepara began in 1988. Before that most of the

[10] Micro-scale firms employ fewer than 5 workers; small scale producers employ 5–19 workers; medium scale firms employ 20–99 workers; and large firms employ 100 workers or more.

products were sold in the domestic market[11] and traders exported indirectly from large cities such as Bali, Semarang, or Jakarta. In 1979, domestic sales were Rp. 21 billion (about US $33.5 million) and the industry employed over 11,000 workers. Sales reached Rp. 81 billion (about US $81.5 million) in 1983 and employed more than 18,000 workers.[12] No reports are available before 1989 but export data from the nearest harbor of Semarang were US $1.6 million[13]. Some of this export data could also include the exports by traders from other towns in Central Java. Schiller and Schiller (1997) doubt the export data, and suggest that the real amount will be higher because many firms tried to reduce the export sales volume in order to lower the taxes owed. However, most researchers agree that the export data reported by the Trade Office is more reliable, as it is based on export documents.

The development of Jepara exports from 1989 is presented in Table 6.1.

Table 6.1 The development of exports value of Jepara, Central Java, Indonesia and some Asian countries and the Jepara relative exports from 1989 to 2006

Year	Exports value (in million US $)				Jepara relative export (%)		
	Jepara	Central Java	Indonesia	Some Asian countries	to Central Java	to Indonesia	to some Asian countries
1989	4		21	138		18.1	2.8
1990	4		37	207		10.7	1.9
1991	4		65	314		6.9	1.4
1992	24		117	696		20.4	3.4
1993	48		205	983		23.3	4.8
1994	49		265	1351		18.4	3.6
1995	59		311	1621		19.1	3.7
1996	97		354	1878		27.5	5.2
1997	147		331	2158		44.5	6.8
1998	169		331	2125		51.1	8.0
1999	201	454	587	2896	44.4	34.3	7.0
2000	201	504	737	3656	39.8	27.2	5.5
2001	75	393	718	3600	19.0	10.4	2.1
2002	77	465	789	4089	16.6	9.8	1.9
2003	112	544	815	5578	20.7	13.8	2.0
2004	135	467	860	6286	28.8	15.6	2.1
2005	119	665	1010	6374	17.9	11.8	1.9
2006	87	476					

Source: Disperindag Jepara (2007); Disperindag (2007); The United Nations Statistics Division (2006).
Note: The exports value is a nominal value of export for a particular year in US $.

From the export values, the cluster grew from 1989 to 1998, were sustained from 1999 to 2000, reached a downturn and declined afterward. Although it increased again, the rise was modest, compared to performance before 2000. Exports have declined again since 2005.

[11] An interview with one producer revealed that, in the 1950s, his father used to travel to Singapore with a bulk of furniture items and return home when all the items were sold.
[12] The exchange rate for dollar in rupiah was Rp. 626.75 in 1979 and Rp. 994.25 in 1983.
[13] In the early development of the Jepara cluster, the Jepara products were exported through several harbors.

Researchers such as Schiller and Schiller (1997) identify market factors, cultural factors, and state role factors that contribute to the growth success of the Jepara industry, whereas Alexander and Alexander (2000) stress social and cultural factors as having a major influence. This research supports both of their arguments. It is also necessary to emphasize, separately, the roles of small firms/subcontracting, and the availability of a large pool of part-time labor as important driving factors. However, there are still no clear answer about the reasons for the decline. To get the insight about the development of Jepara cluster exports over time, Table 6.1 also presents the relative export of Jepara compared to export from Central Java, Indonesia, and some Asian countries.

Based on the development of exports value, we conclude that after 2000 the Jepara cluster is in the stage of maturity and tends towards decline. The Central Java exports remain at about the same level since 1999, whereas the Jepara exports show a tendency to a steady decline since 2001-2006. On the contrary, the Indonesian and some Asian countries wood furniture exports kept growing over the period 1989-2005 with only a slight decrease in the year 2001 (see Table 6.1), albeit at a gradually slower rate. If we ilustrate the dynamic of the cluster based on the export value, the Jepara cluster is in the stage of maturity tending towards decline. Central Java and Jepara firms are hit particularly hard by the shortage of raw material and the increasing competition in terms of quality, delivery and marketing from some Asian Countries (especially from China and Vietnam).

The question is whether other main clusters in Central Java province also declined as happened in Jepara cluster. For that purpose, we compare the real production value from Jepara with 3 other main clusters (Klaten, Sukoharjo and Semarang City), Although the clusters in Central Java are interrelated, the dynamics of the Jepara cluster are slightly different from those of other main clusters as can be seen from the development in the clusters' real production value presented in Table 6.2.

Table 6.2 The development of total production value (in 000 rupiah real price) and share of clusters in total of Central Java from 1994 to 2003

	Jepara		Klaten		Sukoharjo		Semarang City		Other		Central Java	
	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share	Total	Share
1994	65,250	36.6	10,131	5.7	5,310	2.9	5,008	2.8	92,650	51.9	178,420	100.0
1995	113,724	49.6	9,945	4.3	5,040	2.2	11,990	5.2	88,480	38.6	229,164	100.0
1996	178,178	53.1	9,451	2.8	7,475	2.2	23,925	7.1	116,688	34.8	335,619	100.0
1997	269,586	49.9	21,424	3.9	27,897	5.2	31,378	5.8	190,240	35.2	540,423	100.0
1998	273,378	41.3	31,174	4.7	21,866	3.3	75,686	11.4	259,540	39.2	661,627	100.0
1999	221,760	42.3	19,776	3.8	18,279	3.5	88,770	16.9	175,360	33.5	523,950	100.0
2000	234,000	36.6	35,496	5.5	38,934	6.1	59,904	9.4	270,800	42.4	639,327	100.0
2001	176,187	30.7	29,351	5.1	28,350	4.9	83,808	14.6	255,960	44.6	573,580	100.0
2002	138,852	30.3	25,700	5.6	32,946	7.2	75,636	16.5	184,628	40.3	457,884	100.0
2003	133,245	30.9	26,673	6.2	35,560	8.2	95,407	22.1	140,616	32.6	431,424	100.0

Source: BPS (2005)

Considering production value, all clusters have declined during the period 2001-2003, but the decline in the Jepara cluster was particularly strong. In the Jepara cluster, firms are apparently more sensitive to the impact of shortage of raw materials and international competition. This may be related to the ability of firms to adjust to business changes as many of them are accustomed to traditional ways of producing. Many firms increased their cooperation to improve access to raw material, production, and marketing, but they could not overcome these problems to a sufficient degree.

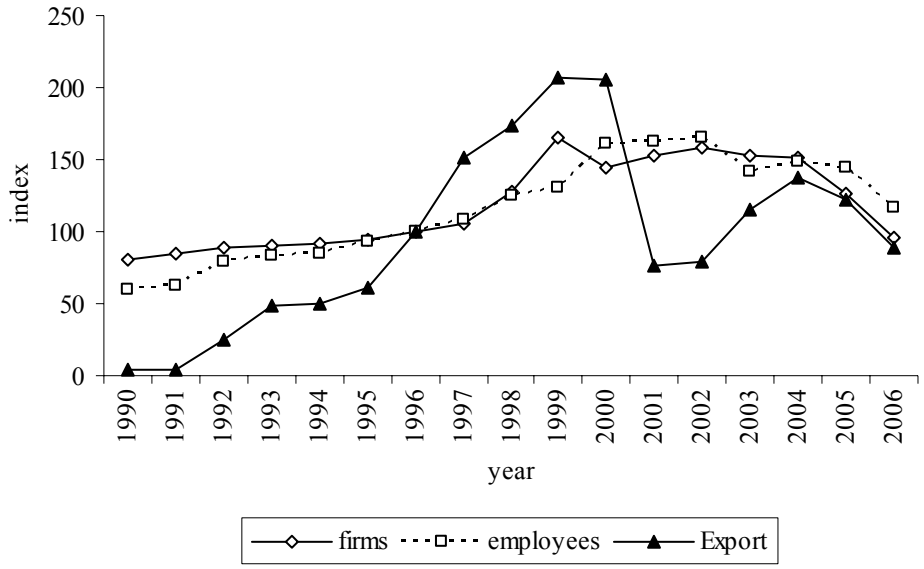
To sum up, considering export value, the Jepara cluster is in the stage of maturity tending towards decline. The shortage of materials and competition from foreign countries affected the decline, while the internal factors of the cluster caused inability to adjust to the challenge.

6.3.2 The indicators and cluster trajectories

In Chapter 3, we cited Maggioni (2004) who argues that the evolution of a cluster can be described by using the number of firms. Due to data constraints, to portray the pattern of the Jepara cluster evolution, we also use "number of workers" and "export value" to complement the indicator number of firms. The export value indicator is used since the number of firms and number of workers pose problems. Regarding the number of firms, there are some closed firms that do not report to the local office, as reporting their position has no consequences for the owners. While regarding the number of employees, we found during field interviews that some firms experiencing a decline in sales do not reduce their permanent workers, but rather rearrange the working shifts among their employees. In this case, the company does not have to fire some of its workers. As a result, the employee working day is reduced. For instance, instead of employing workers to work six days, firms schedule half of their workers to work three days, and the others also work three days on a rotating schedule. Therefore, the decline in number of firms and number of employees is

not as drastic as the changes in export values. From the three indicators above, the pattern of trajectories of the Jepara cluster can be seen in Figure 6.1.

Figure 6.1 The number of firms, employees, and export value of the Jepara cluster (1996=100)



Source: Disperindag (2007)

The cluster exports, number of firms, and employment grew for more than 10 years, but tended to decline in the last few years (see also Appendix 6A.1 and 6A.2).

As explained in Chapter 3, Knorringa (2002) proposes three types of cluster trajectories in which each type of trajectory has implications for the upgrading opportunities of local firms. Using the Knorringa framework, Moeda (2001) argues that the Jepara cluster has evolved from a basic agglomeration and moved to a hub-and-spoke type cluster. His analysis is based on 12 of his proposed indicators: size of the firms, nature of cooperation and competition, conflict resolution in cooperation and competition, role of industrial and trade associations, capability of creating innovative products and production processes, product differentiation and diversification, capability of accessing various sources of information, level of industrial specialization, production technology, market orientation, existing supporting and related industries, and finally, support from R&D, standardization, and educational institutions. Unfortunately, it appears that his indicators are rather subjective. Moeda splits the evolution of the Jepara cluster into period types; he suggests that this cluster can be described as a basic agglomeration type before the 1970s that evolved to a satellite type from 1977 to 1989, and from 1990, developed into a hub-and-spoke type.

We agree with Moeda's identification and suggest that the cluster has recently evolved to yet another type. In the last few years, it has transformed from a hub-and-spoke type towards a satellite form. This argument is supported by data on the development of a number of firms and their net market entry (see Table 6.2). The table shows that total number of firms has tended to increase, as shown by the net market entry from total number of firms, which decreased in 2002 but the decrease tended to slow down afterwards. However, when the number of firms is split according to size, we observe that the net entry for L&M firms has continuously declined since 2000. According to key informants from the local labor office (Perindag, 2005), some firms that have closed down are large, including one foreign-owned firm that had employed 800 workers. In the mean time, some foreign firms have moved to other clusters.

Table 6.3 Development of the number of firms and net market entry from 1990 – 2003

Year	total		L&M firms		small firms	
	# of firms	net market entry	# of firms	net market entry	# of firms	net market entry
1990	1,902					
1991	1,973	71				
1992	2,097	124				
1993	2,110	13				
1994	2,145	35	145		2000	
1995	2,216	71	234	89	1982	-18
1996	2,347	131	286	52	2061	79
1997	2,493	146	306	20	2187	126
1998	3,008	515	322	16	2686	499
1999	3,865	857	330	8	3535	849
2000	3,400	-465	312	-18	3088	-447
2001	3,593	193	281	-31	3312	224
2002	3,720	127	261	-20	3459	147
2003	3,597	-123	235	-26	3362	-97

Source: Disperindag (2003); BPS (2003).

Thus far, there is no agreement among scholars regarding an explanation for a cluster's decline. The literature highlights two different views on this matter (Boschma and Lambooy, 1999). The first views the decline in an industrial cluster as a natural phenomenon, comparable to the evolution of a product's life cycle. The second views the decline of an industrial cluster as a problem of adjustment. As a cluster declines, it loses its ability to sustain diversity of competencies and adjust to environmental changes. The causes of the decline are usually complex, a blend of exogenous and endogenous factors. In this context, Maggioni (2004) agrees that a lack of innovation is the reason for the decline of a cluster's life cycle. He argues that innovation and the learning processes of

firms are critical to growth. Loebis and Schmitz also agree that the export value decline of the Jepara cluster is caused by the low road strategy applied by the cluster in maintaining its growth.

In the case of the Jepara cluster, these data suggest that the tendency to decline occurs due to its inability to cope with new environmental challenges (Zucchella, 2006). We observe that at least two other possible reasons (overall market decline, lack of skills) can be ruled out. Indeed, although the world demand for furniture has decreased the prospect is still significant, as shown by the growing trend of exports from several developing countries such as China, Vietnam, and Malaysia. Secondly, the cluster has many workers who are endowed with specific manufacturing skills and can potentially develop even further.

To summarize, the Jepara cluster has passed through the growth stage and has shifted to the maturity stage and is tending towards decline. From the cluster typology, it has evolved from a hub-and-spoke type and now tends towards a satellite form of cluster. The decline in the Jepara cluster is related to changes in the business environment and the inability of firms to adjust to the changes; this is associated with the degree of innovation and level of upgrading of firms in the cluster.

6.4 The international context

As explained in Chapter 1, the growth in the Jepara wood furniture industry benefited from growth in the world market in the 1990s. Although wooden furniture is only one sub-sector among several furniture products, 1998 data shows that world demand of the wood furniture industry is the 19th largest traded goods sector from 261 groups of products, having a total global trade value of $50 billion (Kaplinsky and Readman, 2002). This value is higher than the apparel or footwear industries. Kaplinsky and Readman (2002) reports that between 1994 and 1998, this sector grew by 41%, also depicting a higher growth rate than the clothing and footwear sectors. The opening of the Indonesian economy has allowed foreign buyers to enter Jepara, paving the way to becoming one of the supply sources for wood furniture products. The unexpected currency devaluation of 1997–1998 has contributed to the cluster's success. Although domestic consumer purchasing power has decreased, the devaluation of the rupiah to the dollar due to the Asian financial crisis caused the price of Indonesian furniture products to decrease in the international market, as most inputs are local. These factors resulted in an increase in exports, an increase in employment, and higher incomes for the local people.

The transition of many firms from domestic manufacturers to export producers transformed the Jepara cluster from a stagnant to a dynamic cluster. Otto S, the Australian foreign buyer, quickly discovered that product quality of local firms was low and could meet neither quality nor quantity standards of the international market. Raising quality standards was therefore the target for upgrading by buyers (see Box 6.3). In partnerships with locals, after having established a furniture factory in 1988, and because the law forbade full ownership, Otto S recruited local producers as subcontractors to support his factory, a colonial design was introduced, and access to foreign markets through exports to Australia was secured. To control quality, finishing processes such as sanding, varnishing, and packing were done in the factory. The introduction of modern designs (European styles) produced by local suppliers increased market access for Jepara products to be exported to Australia and Europe. Growth of the market attracted other foreigners to develop similar business ventures with Jepara producers.

Box 6.3 Upgrading by foreign buyers

Mr. Otto S, a young Australian, was the first foreigner to Jepara after having visited a wooden furniture shop in Jakarta in 1986. Although he opened a non-furniture business upon moving to Jepara, he was also the first foreigner to invest in a wood furniture company. According to Mr. Otto, although many people produced traditional furniture carvings, the quality was very low and utilized primitive production processes. During his visits to producers, he talked with producers about flaws in their processes in terms of construction and other technical aspects. This signaled the beginning of foreign involvement in the upgrading of production processes.

Foreigners introduced antique reproductions for indoor products in 1988 and many design types for outdoor garden furniture in 1991. The introduction of new designs and the production of classic European styles are other success factors. Some local styles are exported in a limited number.

Meanwhile, the industry was closed to foreign investors until the mid-1990s, so local entrepreneurs benefited from offering an informal partnership. Successful partnerships with foreigners, especially westerners, were perceived as trendy and a symbol of success. There were several forms of foreign involvement during that time (CEMSED, 1997; Sandee et al., 2000). First, foreigners used their local partners' names and provided them with a monthly salary and other compensations, but management was in foreign hands. Frequently, this partnership resembled a contract marriage. Second, the local partner was involved in the daily management but had little power in financial and marketing decisions. Third, full partnerships were established, in which local partners were involved in daily management, including financial and marketing matters. Because cooperation was informal, foreigners preferred to cooperate with local producers who already had formal status, such as a CV (partnerships) and Limited company (corporations), in order to ensure

cooperation. Many foreigners had invested a large amount of money in their businesses. However, in some cases where foreigners used their partners' names for the businesses, they left large debts when the business failed.

Foreign investment increased as the Jepara products became more and more attractive; in 1989 there were about 20 foreign buyers recorded in the Jepara wood furniture industry, increasing to 28 in 1992, and 154 (registered) in 1996. Twenty-seven buyers worked in partnerships with locals in manufacturing, while the rest were traders, brokers, or engaged in other forms of cooperation. Others did not register because they lived in surrounding towns.

The important role of foreign buyers can be seen from their dominance in exporting. In 1993, the top 20 firms accumulated 70% of the total exports; six were run by foreigners, four by Chinese Indonesians, and 10 by Javanese (Alexander and Alexander, 2000). In 1997, from the 10 largest exporters, four were owned by foreigners, five were controlled by indigenous people, and one was owned by a Chinese Indonesian. These large exporters controlled about 50% of the export market. Therefore, foreigners were estimated to control about 25% of the export market (Schiller and Schiller, 1997, p. 3). Since quality upgrading is a critical aspect for most foreign buyers, many will provide equipment, machinery and production technology, training, and even financial support for their suppliers. Some buyers also provide office equipment so that they can submit orders by fax or email; in other words, technology transfers by foreign buyers, in terms of design, production processes, management, and knowledge about machinery and other equipment has helped to upgrade firms in the cluster so that they can produce goods according to international quality standards.

Nevertheless, export transactions also often involve foreigners who visit Jepara one or two times a year and buy only one or two containers. Most of them stay in hotels in Jepara, while others stay in hotels in the nearby cities of Semarang, Kudus, or Solo. Many prefer to deal with western foreigners they meet in hotels or restaurants in Jepara. However, during the monetary crisis period, transactions also involved instant buyers who had never worked as buyers before. These people preferred to engage in business transactions with indigenous firms that had no established record of accomplishments in exporting (meeting quality, quantity, and on-time delivery standards). With only tourist visas, some buyers purchased furniture on the spot or bought available products at producers' workshops with cash, pitted the producers against each other to get cheap prices, and were unconcerned with producers' upgrading, because they had no capacity to carry out improvements. The

result was an increase in competition between foreign buyers and locals. Moreover, with the entry of foreign buyers the Jepara cluster changed in the type of network connecting local firms to the export market; it can be described as a buyer-driven value chain, in which lead firms govern all chains in the network. Furthermore, unlike the foreign buyers of the Torreon cluster (Bair and Gereffi, 2001), the buyers of Jepara furniture are relatively small and no single buyer dominates, implying that distribution of power is relatively symmetric.

Although foreigners played a significant part in the development of the industry by upgrading, expanding the market access, and providing many types of support, their role especially in the Jepara wood furniture industry is criticized by the media. Many foreign buyers dominated the higher value-added activities and replaced the positions heretofore occupied by local traders. Many of them indicated that they had Indonesian partners but recorded their investments as domestic. Some local traders have asked the government to intervene and enforce the law against these foreigners, but it sees the presence of foreigners as having a positive impact on the local economy through employment creation and increased wages. The government insists that, if indigenous business is strong, foreigners will automatically leave Jepara. The increasingly unsatisfactory behavior of some foreigners creates tension and negative sentiments among groups towards foreigners. At the end of 2000, the number of foreign buyers to Jepara had declined due to the unwelcoming conditions, and some foreign-owned firms did move out of Jepara.

To conclude, the development of the world market, currency devaluation, and the entry of foreign buyers have significantly affected the development of the Jepara cluster. Foreign buyers have also provided access to the international market and helped local producers to upgrade. However, due to changes in consumer preference and increased competition among developing countries, world demand for Jepara exports tended to decline since 2000.

6.5 The role of small firms

The availability of many small firms has contributed to the development of the Jepara cluster. This section describes the clustering of wood furniture firms (Section 6.5.1), and the role of small firms and the labor market in somewhat more detail (Section 6.5.2).

6.5.1 SME clusters in the wood furniture industry of Central Java

In Central Java there are more than 4,400 small industrial clusters spread across the province. The clusters manufacture many kinds of products, from food, to textiles and leather, wood and wood products, chemicals, non-metallic mineral products, metals, and

others. Almost 50% of small scale firms and about 28% of medium scale firms in Central Java are clustered. In other words, more small scale firms are clustered compared to large and medium (L&M) scale firms. Most of the clusters in Central Java are micro-firm clusters that tend to be stagnant. There are several active and dynamic clusters, including a wig and hair accessory cluster, a textile weaving cluster, brass handicraft cluster, roof tile cluster, and metal casting cluster (Supratikno, 2002; Sandee et al., 2002). Arguably, the productivity of small firms in a cluster is not necessarily lower than that of large firms, as a cluster can potentially function as a large corporation if cooperation and collective action between entrepreneurs is intrinsic. However, data show that productivity of firms in a cluster is lower than that of firms that are dispersed; this regularity is found in almost all sectors where small firms are clustered (BPS, 2002). One explanation for the low productivity is that most of the clusters are rural industrial and produce simple products, use traditional or primitive technology, and are unstable due to fluctuating demand and supply of labor (Klapwijk, 1997). The firms, moreover, are often independent, but not interdependent, so they do not necessarily benefit from being part of a network in the cluster (Tambunan, 2005).

In regard to the wood furniture clusters in Central Java, Sulandjari and Rupidara (2002) argue that they are found in 32 districts/cities. Most are involved in processing – either in manufacturing, finishing, or trading – and one cluster (Surakarta) focuses only on finishing and trading. Based on the target market, cluster size, and wood accessibility, 14 of the 32 clusters are indicated as having growth potential. When these 14 clusters with growth potential are scored based on number and origin of workers, management and technological capabilities, wood accessibility, and market network, three groups emerge. In the first stratum, the main clusters (score > 4) are Jepara and Klaten. The second stratum (score 3-4) includes Blora, Pemalang, Purwodadi, and Purworejo. The third stratum (score < 3) contains Boyolali, Kendal, Rembang, Salatiga, Semarang, Solo, Sukoharjo, and Tegal.[14]

The study of Sulandjari and Rupidara proposes a useful stratification and typology of the wood furniture industrial clusters in which they advise that an intervention program should be undertaken. Unfortunately, they do not give a precise definition of a cluster. In this research, the concept of a cluster refers to the agglomeration of firms in a sub-district.

[14] A score of 4 means that the cluster is advanced; it has the highest potential to grow. A score of 3-4 means that the cluster is developed and has a medium potential to grow, whereas a score of < 3 means that the cluster is less developed and has the lowest potential to grow.

However, there are several sub-districts in a district that can be considered as clusters, and in these cases the name of a district or town is used to address them. Hence, the labeling of clusters is not precise. According to the Industrial Office, there are several main wood furniture clusters in Central Java: Jepara, Klaten, Sukoharjo, and Semarang. Among these, Jepara is the largest. Compared to Sulandjari, the classification made by the Industrial Office is broader, since it also considers clusters that have elements of L&M firms.

When we consider the geography of Central Java we can detect several reasons for wood furniture firm clustering in this province. First, proximity to sources of main materials is significant, as in Jepara, Grobogan, Blora, and Sragen. Second, clustering has strong historical roots, as in Jepara and Klaten. Third, clustering provides easy access to consumers or buyers, as in Semarang and Surakarta. Fourth, clustering provides easy access to business facilities, as in Semarang. Firms may in fact have more than one motive for clustering. Many other factors, which will be explored in more detail in Chapters 7 and 8, also influence the success of firms in a cluster and ultimately determine its development.

6.5.2 Large number of small firms and pooling of the labor market

When demand increases together with an increase in product standards that require more complex production processes, firms usually must invest in machinery and recruit more skilled workers into the company. However, this does not happen to most dynamic clusters where specialization and networking are strong, because specialization and networking, and vertical and horizontal cooperation in the cluster provide alternative solutions for firms to decentralize jobs to others. This also happens in Jepara, even though specialization is somewhat different here. In this cluster, delegating decentralized work to others can be done by either subcontracting or incontracting. By *subcontracting*, jobs are outsourced to firms specializing in a particular process or product, whereas by *incontracting*, the owner of a large firm employs a "job work contractor" who acts as a production manager for a particular job and is responsible for employing labor for this job (Cawthorne, 1999). The production process that can be outsourced is seen in Box 6.4.

During the growth stage in Jepara, two divergent trends among larger firms are associated with the rapid increase in world demand; first, firms increasingly decentralized jobs to others, whether through an outcontracting or incontracting system; and second, they fully integrated and concentrate the work in the factory. Through this dual approach, the Jepara industry gains advantages from the availability of a large number of small scale firms and pooling of the labor market, especially with part-time workers. In addition, the

availability of a large number of small firms enables large firms to subcontract a huge (atypical) order to a large number of small firms in one village or a surrounding area. This is advantageous for large firms, as the small firms who do the jobs need not be vertically integrated within the large firms. Large firms do not have to increase the labor, but they can increase production capacity. In short, large firms benefit because they can (1) save on wages and benefits, (2) transfer the uncertain demand outside the firm, and (3) get access to specialized skills and inputs (Abraham and Taylor, 1993). In addition, for small firms, besides gaining market access, they can also reduce several problems that may constrain them, such as the need for capital.

Box 6.4 Wood furniture production processes

The jobs that may be outsourced to subcontractors may cover part of the job or a relatively complete intermediate product. Stage 1: The log is sliced into several slices of wood or planks. This job is done mostly by sawmill firms. Stage 4: The job to assemble wood furniture components may be given to small scale firms. Stage 5: The carving job is usually given to small scale firms (artistic carvers). Meanwhile, the relatively complete intermediate product may cover outsourced jobs from stage 1 to stage 5, so that the firms receive unfinished wood furniture products.

Stage	Activities	Possibility of being outsourced	
		Alternative 1	Alternative 2
1	The log is sliced into several boards/planks.	v	v
2	The plank or sliced wood is dried until it reaches a specified level of dryness.		v
3	The dried sliced wood is cut to become wood furniture components based on its design.		v
4	The wood furniture components are assembled to become an unfinished furniture product.	v	v
5	The unfinished furniture product is carved (if it is needed).	v	v
6	The unfinished furniture product is roughly sanded.		
7	The unfinished furniture product is finely sanded.		
8	The unfinished furniture product that is already finely sanded is varnished.		
9	The varnished furniture is dried.		
10	The dried varnished furniture is packed.		
11	The furniture is made ready to be shipped.		

Note: As the final processes (stages 6 – 11) determine the quality of the final product, these processes are usually processed by most firms inhouse.

The outsourcing of the work is not only done by L&M scale firms, but also by small scale firms. In the later case, firms that receive a job contract typically re-subcontract to another firm, thus creating multi-layer subcontracting (see Figures 6.2 and 6.3). The fast development of the subcontracting system has caused the small firm sector to expand rapidly in this cluster. It stimulated "a spin-off" in which exporters also motivate their workers to become independent and work exclusively as subcontractors. Furthermore, contractors usually establish

relationships with several subcontractors since the capacity of their subcontractors is usually small. Working with several subcontractors is also a strategy to reduce default risks. To increase efficiency in transactions, many good contractors prefer not to work with too many subcontractors, but rather with medium scale firms (not small firms) that perform as high level suppliers that create a supplier network with small scale firms (Ernst and Kim, 2002). When the demand rose sharply during the Indonesian monetary crisis, most contractors changed their procurement strategies by relying more on subcontractors, and entrepreneurs concentrated on strategic parts of the design and finishing processes which determined a basic final product quality. In other words, the existence of small firms and the practice of subcontracting are important to increasing production and exporting in a relatively short period of time in response to increased global demand.

The subcontracting relationship is important for the circulation of knowledge in the industrial cluster (Beerepoot, 2005). The learning process among subcontractors shows that knowledge transfer along the value chains is diffused among subcontractors. In the Jepara cluster, the learning process goes in both directions, from top to bottom: from buyers (particularly foreign ones), to exporters, and to subcontractors; and bottom up: from subcontractors to exporters (direct and indirect). In a subcontracting relationship, quality controllers from exporting firms regularly visit the subcontractor's factory, so that an informal exchange of information occurs between exporters and subcontractors. Many subcontractors, including their workers, often already have long experience before starting their own firms. Regarding the workers, firms use job training to both instill and develop their skills. The high mobility of workers among firms within the cluster, due to the contact between subcontractors and a firm's workers, is also likely to facilitate knowledge spillovers.

However, the availability of many small scale firms and a large number of part-time workers is insufficient with the changing world demand. Although most producers claim that their processes and products are upgraded, upgrading is not enough compared to other competitor countries. The insufficient upgrading is supported by results from buyer surveys (Posthuma, 2003). Compared to five Asian wood furniture competitors (China, Malaysia, the Philippines, Thailand, and Vietnam), in terms of quality Jepara products rank at the bottom; in terms of production technology, Jepara products rank fifth; and in terms of design, Jepara products rank second. This indicates that one of the problems of the Jepara cluster is innovation. Moreover, the changes in the availability of raw materials have caused most of the wood available on the market to be of low quality.

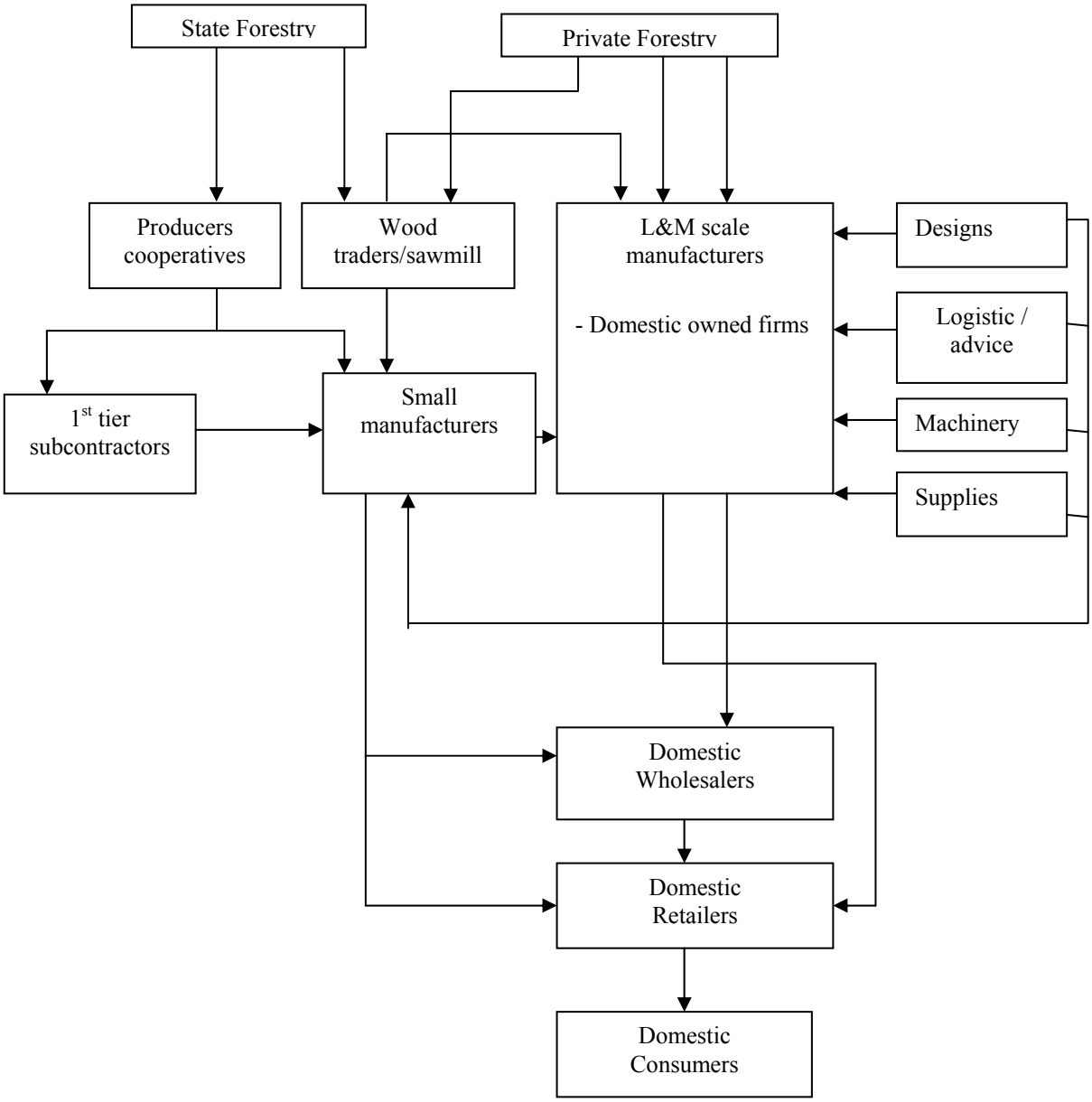
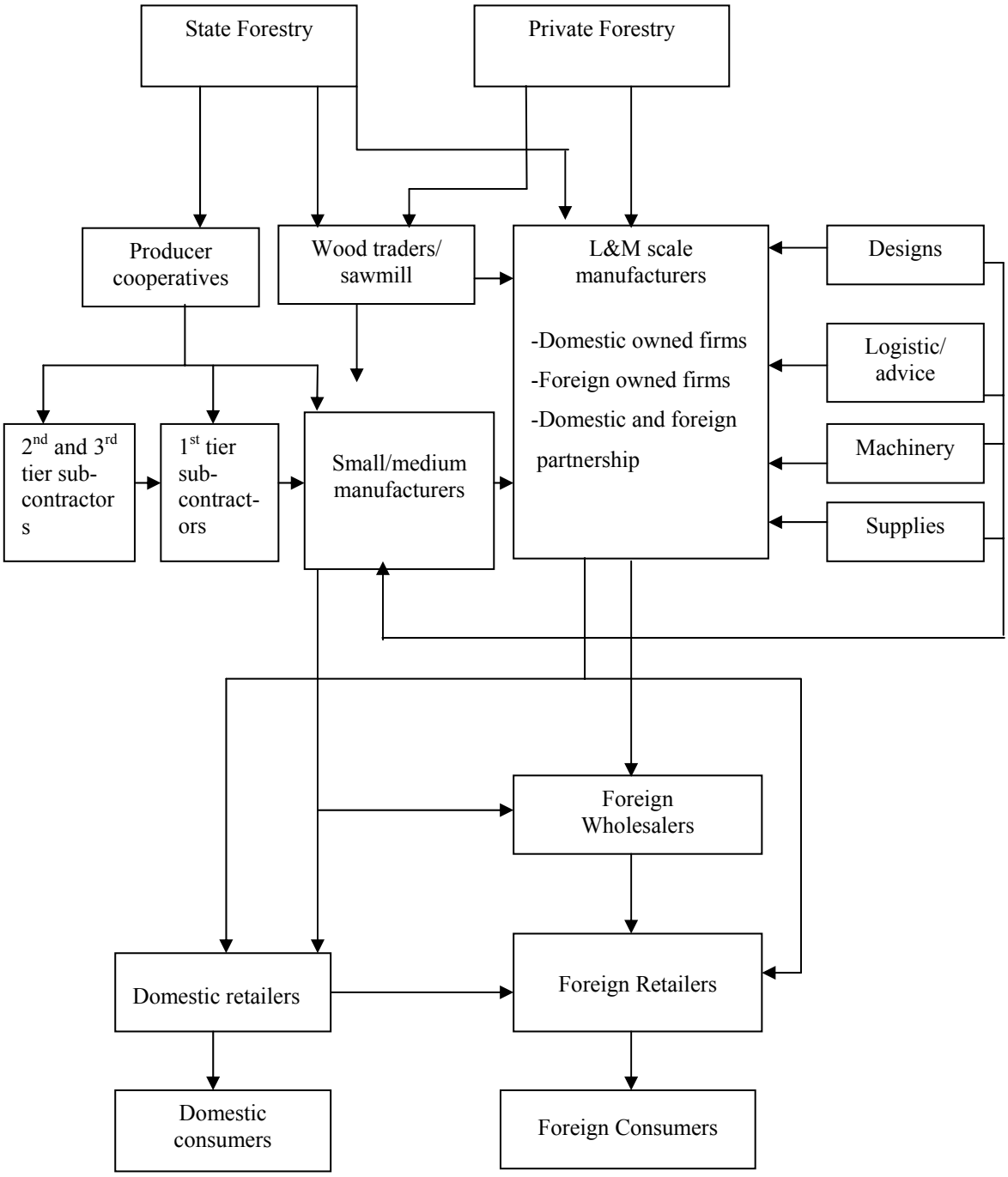

State Forestry
Private Forestry
Producers cooperatives
Wood traders/sawmill
L&M scale manufacturers
- Domestic owned firms
Designs
Logistic / advice
Machinery
Supplies
1st tier subcontractors
Small manufacturers
Domestic Wholesalers
Domestic Retailers
Domestic Consumers

Figure 6.3 Wood furniture value chains after being linked to the international market[15]



Technological enhancement in production process knowledge is needed to improve the quality. During a growth stage, an increase in the quantity can be responded to quickly by subcontracting a large number of the orders to small scale firms. However, if the product

[15] Since the cluster is linked to the international market, international buyers appeared and subcontractors consisted of several layers (1st tier subcontractors, 2nd tier subcontractors, or even 3rd tier subcontractors). The increasing number of chains involved in the clusters (see Figure 6.3) made the chain network longer, which affected the cost and price.

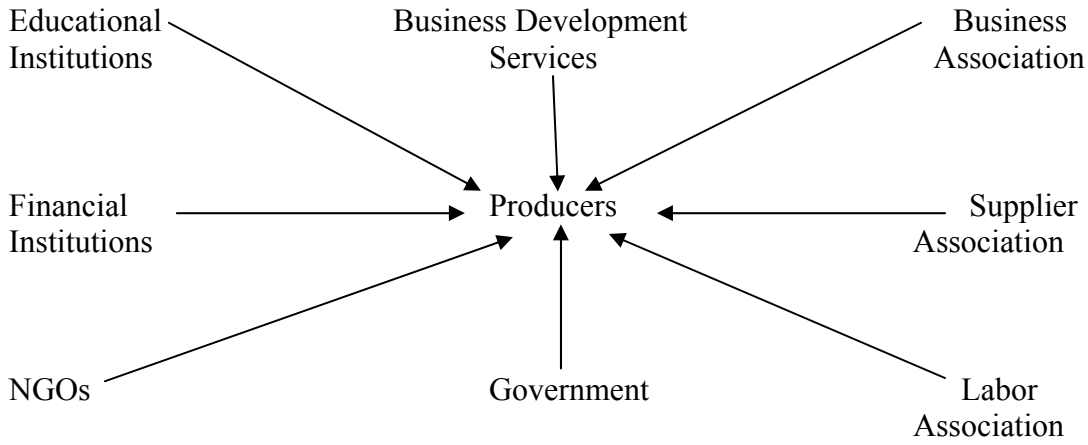
quality is worse than that of competitors, buyers will be reluctant to purchase it. Employing small scale firms to assist in meeting quantity demands succeeded during the growth stage, but the foreign market is no longer willing to tolerate low product quality of Jepara products. The Jepara cluster has a reputation for highly skilled wood carvers, but the increasing demand standards means firms need special training for their workers; as a result, firms cannot rely merely on general job training.

In sum, the availability of a large number of small firms and the pooling of workers has positive contributions in the growing stage of a cluster. However, when changes occur in the business environment but not in the learning system for upgrading knowledge and technology, these factors will become constraints against cluster growth or recovery.

6.6 The role of stakeholders and the government

As explained in Chapter 3, firms receive benefits from innovation in the cluster and institution(s) in the region. This section describes the role of stakeholders that contributed to the development of Jepara cluster (depicted in Figure 6.4).

Figure 6.4 Stakeholders of the wood furniture industry in Jepara



There is a wide range of associations to be found in Jepara: business, supplier, and labor associations. Business associations can either be formal[16] or informal, such as self-help groups. Of the formal associations, with the exception of ASMINDO, most tend to deal with government policy implementation. Meanwhile, ASMINDO also deals with

[16] These include KADIN, APINDO, ASMINDO, ASEPTI, cooperatives like KOPINKRA etc., and supplier associations.

problems faced by most wood furniture producers such as improving product quality, unhealthy competition among producers, shortage of woods, etc. There is a labor association (SPSI), but it is somewhat sluggish, as many workers are not compelled to belong to a labor association. Educational institutions for middle and higher educational levels that are directly related to the wood furniture sector are also found. These institutions supply the cluster with skilled workers.

There are many financial institutions including banks, cooperatives, moneylenders, and rotating credit association (ROSCA), to help firms that lack financial resources. Credit from banks has increased significantly over time as the industry developed. Bank credit is crucial for financing the expansion of L&M scale firms in building showrooms, warehouses, or factories in Jepara. However, credit is not regarded as problematic in the industry, since deposit systems are common in the sales transactions. Many business development services are also available not only to offer management services, but also technical services in production process such as in design and quality control. Foreigners run some of them. Local and international NGOs are also involved in developing the industry, but many are not focused on furniture sectors. This is particularly true for local NGOs, as their objective is to help the weaker people, including small firms. The international NGOs are more committed to furniture sectors but many of their activities are temporary in nature since they are mostly project-based.

Compared to other stakeholders in the wood furniture industry, the role of the government – directly or indirectly – is relatively significant to the development of the Jepara cluster. In order to decrease its dependence on oil export revenues in the 1990s, the central government deregulated exports by simplifying regulations to make export procedures easier. The government also issued regulations banning the export of logs in 1987, and saw timber export in 1990. And, in order to attract foreign capital, foreign investment rules were also deregulated by opening up sub-sectors that had been closed to foreign investors before. One such sub-sector is the wood furniture industry, which allowed for 100% foreign ownership. At the regional and local levels, government also invested in the development of a container port in nearby Semarang, and improved roads and telecommunications.

The local government policies meanwhile complemented central and regional government policies. The local government invited several producers to the 1986 trade exhibition in Bali for the first time (Hartoyo, 2002, cited from Sulandjari and Rupidara, 2002). Afterwards, the government regularly sponsored other promotions in Bali and other

towns or cities, at local and national levels. In the last few years, they have also sponsored the participation or attendance of Jepara producers in international exhibitions. The government also institutionalized a number of credit and educational business programs. Financial assistance in the form of credit or grants is also provided through government technical departments (such as an industrial and trade office) or government-owned companies. Education (training) programs are also offered directly to producers. The government also introduced modern technology like dry kilns and sawing machines by establishing a technological center; government also intervened to guarantee a regular supply of timber and paved village roads to ease factory access for container trucks.

From the explanation above, we conclude that in the Jepara cluster, many institutions have contributed to the development of Jepara cluster. Meanwhile, the role of government is more positive and significant compared to the role of other stakeholders, even though many of the government policy are not effective in promoting small firms.

6.7 Innovative firms and upgrading in the Jepara cluster

This section describes innovation in the Jepara cluster. As discussed in Chapter 3, the cluster literature identifies two strategies or ways for clusters to compete in the global market; these are through high road and low road strategies (Nadvi and Schmitz, 1994). The literature suggests that having a high road rather than a low road will eventually lead to sustainability. However, trying to identify the strategies a cluster utilizes is not an easy task, since both strategies may exist simultaneously in a cluster; even more, both strategies can be found in one firm. Watzema (2005) underlines that, despite the problem of methodology, a cluster uses diverse strategies to maintain its growth. He argues that a high road or low road cannot be distinguished as black and white, but tends to be a spectrum ranging from a low road at one end and ending with a high road at the opposite end. Therefore, in order to visualize a cluster's competitive strategies, he has categorized the firms into five groups, starting with low road companies, semi low road, neutral companies, semi high road, and ending with high road companies. From his study, Watzema (2005) found that only a small number of firms in the Jepara cluster could be identified as purely low road or high road firms. Although he could not clearly distinguish the category of road the Jepara cluster currently uses, he agrees that Jepara firms should move to a high road.

Meanwhile, Posthuma (2003) classifies the Jepara cluster growth strategies as low road, as shown by the legal status of most of the firms, the managerial practices applied by

most of the firms in dealing with workers, and the utilization of wood as raw material. A study by Sulandjari and Rupidara, (2002) shows that wood furniture firms in most areas in Central Java have no legal status and have informal relationships with their workers. In the Jepara cluster, only 12.5% of firms have a formal status and only 30% have formal relationships with their workers. Limited benefits are provided for safety and health in the workplace. In addition, Loebis and Schmitz (2005) support previous findings that a low road strategy has been taken by the Jepara cluster in maintaining cluster growth. They argue that the low road strategy increases exports and raises wages, but that it is not sustainable. This strategy has resulted in a decline in exporting in the last few years.

A further question arises from the finding above: how should the Jepara cluster compete in the international market in the future? In our view, and consistent with the objective to maintain cluster growth, the Jepara cluster needs to move to a high road strategy. First, the wood furniture business environment has changed. The continuous increases in wood prices and decrease in quality has hamstrung firms' competitive strategy of lowering the cost. Second, there are currently many more competitors from other developing countries, who compete in the same market segment with Jepara firms (and most Indonesian firms). Since most can offer cheaper inputs, Jepara products will be out-competed. Third, Jepara producers have good manufacturing capabilities, even though this capability alone cannot allow for adequate competition in the international market. Therefore, the Jepara cluster should enter a niche market that has fewer competitors but higher value added.

In order to move to a high road, upgrading for Jepara firms is required. As defined by Humphrey and Schmitz (2000), there are four types of upgrading: process, product, functional, and intersectoral upgrading. Doing only the process and product upgrading is insufficient for firms to compete in the international market. Upgrading is necessary, but should go beyond process and product upgrading and involve design and marketing. Meanwhile, Watzema (2005) classified the upgrading proposed by Humphrey and Schmitz (2000) as within the domain of operational efficiency, which is not a sufficient status for global competition. He suggests a strategic upgrading instead of mere operational effectiveness. Using the framework of Markides (2000), Watzema (2005) underlines strategic upgrading as a way for firms to place the product differently in the market. His idea regarding upgrading is subjective and difficult to implement, since a cluster consists of myriad firms with different products and behaviors; the concept of Humphrey and Schmitz (2000) is therefore more applicable.

Furthermore, in regard to how upgrading can be done, most researchers agree that the involvement of international buyers is important, since buyers not only have resources, but they also have access to the market. However, in a buyer-driven value chain, foreign buyers will help local firms in upgrading when the upgrading will strengthen their position, but obstruct it when it threatens them. Therefore, simultaneous upgrading in process, product, and beyond, needs to be done by involving foreign buyers and other parties, local government, and local NGOs. International buyers are involved in the upgrading of processes and products, while local government and local NGOs are involved in the upgrading beyond the processes and products. Besides upgrading, government also needs to improve forestry management and enforce laws regarding illegal logging and wood smuggling. Although theoretically easy to convey, it may be difficult to implement on the ground.

To summarize, the Jepara furniture cluster tends to apply a low road strategy to maintain cluster growth. Although the cluster has benefited from the low road strategy due to an increase in exports, increase in employment, and improvement of the local economy, this strategy has led to a gradual decline in exporting in the last few years due to changes in the environmental conditions. Therefore, to maintain its sustainability, the Jepara cluster should move to a high road strategy, where upgrading (continuous innovation) is needed.

6.8 Conclusion

Aside from differences in historical circumstances, the Jepara cluster is no different from clusters in many other developing countries, as it is characterized as: (1) having dynamics that are strongly shaped by external factors, (2) having a strong presence of international buyers in the cluster, (3) considered as a peripheral satellite form, and (4) linked to a global value chain, the cluster focuses on low end activities (Chaminade and Vang, 2006).

The cluster underwent a growth stage and then a maturity stage, but is currently tending to be in a decline stage. The evolution of the Jepara cluster and the driving factors are summarized in Table 6.3.

Table 6.4 The Jepara cluster's evolution, driving factors, trajectories, and growth source

Life cycle	Growth 1988 - 2000	Maturity is tending towards decline: 2001 - present
I. Driving factors		
1. International		
1) demand	Increases with an increasing rate to decreasing rate	Decreases (due to changes in consumer preferences)
2) competitors	It gradually increases	Increases sharply in other countries Negative image of Jepara products
2. National		
1) Regulations & changes in the business environment	- Deregulation in export procedures - Deregulation in foreign direct investments - Ban of export logs - Devaluation of the currency	-Bali bombing -Unfavorable business environment due to a decentralization in administration
2) infrastructure	- Improvements in the harbor - Improvements in roads, electricity, and telephone	-No significant improvements
3) materials (wood)	Relative abundance and good to very good	Shortage and varying, sometimes bad quality
3. Local	- Large number of small firms; specialized skilled workers; large number of temporary workers - Government supports promotions - Improvements in roads, electricity, and telephone	- Sentiment of foreigners - Increasing prices of inputs and services
II. Cluster trajectories	Satellite form shifted to a hub-and-spoke form	Hub-and-spoke tends to shift to the satellite form
III. Growth strategy	Low road strategy and gradually part of firms in the cluster shifted to a high road	The number of firms in the cluster with high road strategy decline

In less than 15 years, the Jepara cluster has gone through the growth stage and has now entered the maturity stage is tending towards decline. The emergence of the Jepara cluster was driven by several factors including a large number of skilled artisans, the availability of raw materials, and the focus and direction given by the royal family in the past. This cluster then became stagnant for many centuries until it linked to the dynamics of the international market in the mid-1980s. Increasing demand from the world market, the currency devaluation, and the role of foreign buyers are the driving factors from the international market; meanwhile, the large number of small scale firms, specialized skilled

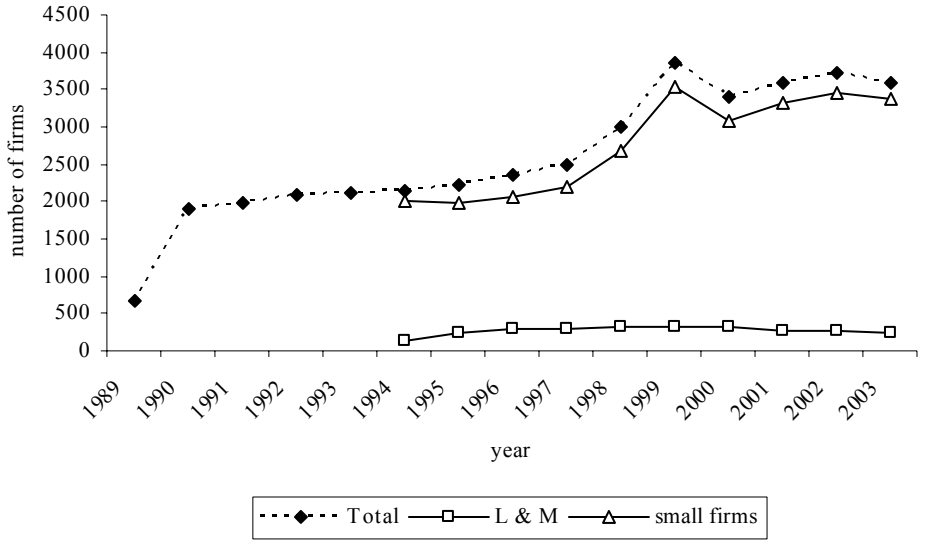
workers, subcontracting and in-contracting, part-time workers, and the role of government are the domestic driving factors that support the growing stage of the cluster's life cycle.

However, changes in international consumer preference, international competition, and the domestic wood market influence the life cycle of the wood furniture industry in Indonesia. Together with an unfavorable local business environment and insufficient innovation, the Jepara cluster has experienced a shift into a declining phase.

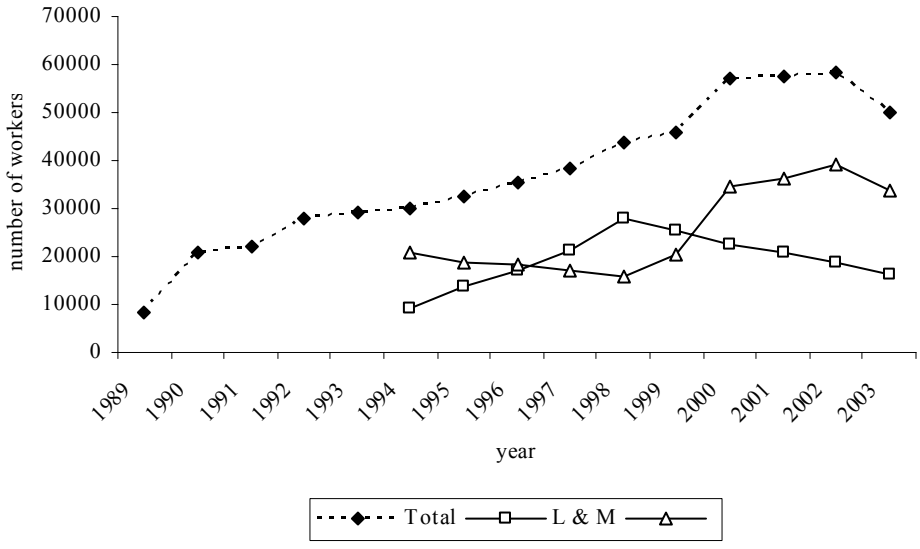
Appendix 6A Cluster trajectories

In this chapter, the cluster trajectories are described using number of firms, supplemented with number of workers and export value. The number of firms and number of workers can be distinguished between L&M and small scale firms. Since L&M scale firms play an important role in the development of the cluster, this appendix portrays the dynamics of the number of firms and the number of workers in aggregate and for the subgroup of L&M firms.

Appendix 6A.1 Jepara cluster trajectories based on the number of firms



Appendix 6A.2 Jepara cluster trajectories based on the number of employees



Appendix 6B Cluster activities

Some pictures on the activities in the Jepara wood furniture cluster are presented below.

A local wood furniture market

A wood trader

Production process in a small firm

Production process in a large firm

The carving process

Chapter 7

Impacts of Externalities on the Wood Furniture Industry in Central Java

7.1 Introduction

As discussed in Chapter 3, location externalities, which are derived from industrial clustering, play an important role in fostering competitive advantages and overcoming growth constraints (Schmitz, 1999). The agglomeration theory stresses that the proximity of firms provides benefits for firms, even though the views regarding the *sources* of the externalities are diverse among scholars in this field. Probably the best-known source was put forward by Marshall (1920), and was later formalized by Arrow (1962), and Romer (1986). This source is currently known as "MAR externalities" after Marshall, Arrow and Romer who emphasized that, as the source of externalities, knowledge tends to be industry-specific. In contrast, Porter (1990) stresses that clusters enhance growth since, in clusters, competition among specialized firms stimulates them towards innovation. Finally, Jacobs (1969) insists that agglomeration economies are obtained from the proximity of diverse firms. However, external benefits enjoyed by firms do not only stem from the spatial concentration of firms, but also from other factors such as linkages with external partners.

There is evidence of firms that perform well but are not located in a cluster (Shaver and Flyer, 2000). Studies show that firms, especially those from developing countries, can gain advantages by establishing a network with external actors, especially international players.

The global value chain (GVC) and global production network (GPN) theories (Gereffi, 1999; Ernst and Kim, 2002) emphasize that a firm can be upgraded by being inserted into the global buyer value chain or production network. In addition, the foreign direct investment (FDI) theory (Dunning, 1993) stresses that becoming a partner in the internalization decisions of foreign/international firms may increase firm capability, in which local firms have potential access to technology transfer. Both theories have been discussed in Chapter 4.

Based on the argument that sources of externalities come from location-specific externalities and international network externalities, an integrated framework is proposed in Chapter 5, which proposes that externalities cause technological progress that finally leads to improved performance. The changes in technological capabilities as a result of externalities can be modelled within a production function framework, which describes the maximum achievable output as a fucntion of inputs and the available technology (Perloff, 2001). The traditional production theory focuses on inputs, of which the quantity to be used in the production process are controllable by management. This theory disregards the external factors that are beyond the control of firms and that influence the transformation process from inputs to outputs. This chapter aims to examine the impact of externalities on the performance of firms in the wood furniture industry in Central Java. For this purpose, production functions are estimated to analyze the effect not only of the agglomeration economies, but also the position within networks with international partners. The appropriateness of the formulated model is statistically tested.

The analysis in this chapter is conducted using annual manufacturing surveys from 1994 to 2003, collected by the Indonesian Central Statistical Bureau.[17] Section 7.2 describes the research hypotheses and Section 7.3 explains the research methodology. The profile of wood furniture firms in Central Java is described in Section 7.4, and results and interpretation of the analysis are presented in Section 7.5, followed by conclusions.

7.2 The research hypotheses

This section provides an overview of hypotheses that will be tested in this chapter. The operational model concerning the impact of externalities on firm performance is described

[17] As discussed in Chapter 2, we follow the literature that defines small firms as firms that employed less than 500 workers. Based on this criterion, most of wood furniture firms in Central Java are considered as small firms. However, for the purpose of identification in the analysis we used the local classification that distinguish large (L), medium (M) and small (S) firms. Large firm is a firm employed 100 or more workers; medium firms is a firm employed 20 to 99 workers; and small firms is a firm employ 5 to 19 workers.

in Figure 5.2. The analysis is centred around four central topics that are extensively investigated empirically.

(1) Sectoral specialization and firm production value

According to the Marshall-Arrow-Romer externalities, the clustering of similar firms from the same sector offer potential benefits for firms inside the cluster which cannot be enjoyed by other firms. Also Lall (1998) emphasises that agglomeration is an important determinant of comparative advantage in addition to internal scale economies and learning. On a similar note, Schmitz (1999) argues that clustering provides externalities and opportunities for joint action that can lead to increasing returns in performance. Furthermore, Marjolein and Romijn (2005) claim that local knowledge spillovers in a cluster are identified as drivers of regional innovative activity, whereas regional agglomeration may stimulate learning and innovation at the firm level. In their study on biotechnological firms in Canada, Aharonson et al. (2004) confirm that the productivity of firms in a cluster increases because clustered firms are eight times more innovative than others. Their study supports the previous studies on manufacturing firms in the UK (Baptista and Swann, 1998). However, another study on productivity conducted in London shows more than others the dominance of pure agglomeration effects (Gordon and McCann, 2000). In contrast, in his study on the metal working sector in the US, Appold (1995) argues that clustering or location agglomeration do not provide competitive advantages but rather collaborative manufacturing. Building on this literature, we arrive at the following hypotheses:

H-7.1 The spatial clustering of firms from the same sector has a positive effect on firm production value. The hypothesis is split into two:
H-7.1a. The spatial clustering of L&M firms from the same sector has a positive effect on firm performance.
H-7.1b. The spatial clustering of small scale firms from the same sector has a positive effect on firm performance.

(2) Diversity and firm production value

Building on the seminal work by Jacobs (1969), literature documents that location in urban areas provides benefits stemming from the diversity of economic activity. Research on the impact of urban location confirms that a city location increases firm productivity (Venables, 2005). Most research on the advantages of urban cities emphasizes the contribution of the advantages of labor (Glaeser and Maré, 2001). Studies across US cities

(Rigby and Essletzbichler, 2002) show there are a number of establishment, industry, and city-specific factors that influence labor productivity. However, cities also create an environment conducive to innovation through knowledge spillovers (Certion et al., 2001). According to Webster and Muller (2000), the competitiveness offered by cities is sourced from economic structure, human resources, institutional milieu, and territorial endowment. Rosenthal and Strange (2004) argue that, despite labor market pooling, input sharing, and knowledge spillovers, cities also provide natural advantages, home market effects, consumption opportunities, and rent-seeking advantages. Sveikauskas (1975) distinguishes between static and dynamic advantages that contribute to the increase in productivity. However, in many developing countries, cities have developed as centers of poverty and social collapse (Webster and Muller, 2000), as crime and violence increasingly affect the lives of the people. Meanwhile, there is a tendency for scholars to explore the potential of developing small cities (Rondinelli, 1983). Building on this literature, we arrive at the following hypotheses:

H-7.2 The clustering of firms from different sectors has a positive effect on firm performance.

(3) Exporter firms and firm production value

There is a plethora of research showing that exporting producers have higher productivity than non-exporters (Aw and Hwang, 1995; Bernard and Jensen, 1995; Jensen and Wagner, 1997; Clerides et al., 1998; and Aw et al., 2000). The self-selection theory according to which high-productivity firms engage relatively heavily in exporting and the theory of learning-by-exporting provide reasons for this better performance (Clerides et al., 1998; Bernard and Jensen, 1999). The study on Spanish manufacturing firms (Delgado et al., 2002) confirms that productivity of exporting firms is higher than of non-exporting firms. However, they find evidence supporting the self-selection argument according to which high-productivity firms engage in exporting, whereas learning-by-exporting is rather weak. Meanwhile, research on two new industrialized countries (Aw et al., 2000) provides different evidence. In Taiwan (China), self-selection models can predict variations in productivity, whereas in Korea no significant difference is found in productivity between firms that enter or exit from the export market. Building on this literature, we arrive at the following hypotheses

H-7.3 An exporting firm performs better than a non-exporting firm.

(4) Foreign ownership and firm production value

The thesis that foreign-owned firms have better performance than domestic firms is supported by much research (Asheghian, 1982; Kumar, 1984; Hughes et al., 1987; Grant, 1987). The study in the US (Doms and Jensen, 1998; Howensteine and Zeile, 1994) provides evidence that the source of better performance in foreign-owned firms is their significantly higher labor productivity in comparison with those remaining under domestic ownership, since these firms spend more in employee investments. Howensteine and Zeile (1994) argue that foreign-owned establishments are more capital-intensive and larger. Meanwhile, research in the UK (Griffith and Simpson, 2001; Criscuolo and Martin, 2003) gives the same results. According to Bellak (2004), the difference in performance between foreign firms and domestic firms is caused by differences in productivity, technology, profitability, wages, skills, and growth. Moreover, Douma et al. (2006) argue that the reasons for better performance are due to larger involvement of shareholders, stronger commitment, and longer-term involvement. The same results are also evident in research on developing countries. Studies in Indonesia (Arnold and Javorcik, 2005) support the above findings. Studies in developed countries provide evidence that better performance is due to the multi-nationality of the firm, rather than the nationality of the firm owner. Building on this literature, we arrive at the following hypotheses:

H-7.4 Foreign-owned firms show a higher performance than non-foreign-owned firms.

7.3 Research methodology

In this section, the methodology used to test the impact of cluster factors and linkage to the international network is presented.

7.3.1 Model specification

We discuss here the model specification used for the estimation in Section 7.5. Many models of economic growth and development assume that output is generated by two input factors, labor and capital. A production function is used to describe the transformation process in accordance with which inputs are transformed into output. A production function framework is a commonly-used tool to examine the contributions of external factors on productivity (Moomaw, 1983; Nakamura, 1985).

The analysis rests on a production function that relates the output of firms for a given sector in a region to a number of variables according to $Y = A.f(L, K)$ where Y is output, A

is technology (modeled in a Hicks-neutral fashion), L is labour, and K is capital. Typical examples of production functions often used are the so-called Cobb-Douglas and CES production function, the former being a restricted version of the latter. Several studies on agglomeration economies employ the Constant Elasticity Substitution (CES) function to examine the impact of externalities in the manufacturing industry, such as in Alperovich (1980) and Calem and Carlino (1991).

A production function is estimated in this study using the CES model, as currently it is frequently used to describe the production behavior of an economy. There are several different variants of the CES production function in the literature, of which the Arrow et al. (1961) model specification has become the standard specification (Klump and Preissler, 2000). The functional form adopted by ACMS is as follows:

$$Y_{it} = A_{it}\left(\alpha L_{it}^{-\rho} + (1-\alpha)K_{it}^{-\rho}\right)^{-\mu/\rho} \tag{7.1}$$

where Y is output, K is capital, L is labor, A is an efficiency parameter, α is a distribution parameter, ρ is a substitution parameter, and μ captures the economies of scale. In this model, the elasticity of substitution is estimated along with dummies for cluster factors and international linkages, characterizing the determinants of A (we elaborate on this below).

In the case of a production function that is characterized by constant returns to scale, μ equals 1. The elasticity of substitution between K and L is equal to $1 / (1 + \rho)$. We typically assume that $\rho > -1$, to avoid the substitution elasticity from becoming negative. If the substitution elasticity is zero, the two input factors can be interpreted as complements (viz. the production function being the Leontief type). In the case of substitution elasticity equal to 1, the production function is of the Cobb-Douglas type (viz. $Y_{it} = A_{it} L_{it}^{\alpha} K_{it}^{1-\alpha}$). The Cobb-Douglas production function used to be popular to estimate production functions, but this model is rather rigid because it implies that elasticity of substitution between capital and labor is constant and always equal to one. For reasons of comparison and given their popularity in much of the literature, the Cobb-Douglas production function results are presented in Appendix 7.A.

7.3.2 Modeling externalities

As mentioned above, knowledge spillover in a cluster is the source of dynamic externalities and has a critical role for cluster growth (Glaeser et al., 1992). Due to knowledge spillovers, firms are able to improve their production technology very inexpensively as they can glean the knowledge from surrounding firms without having to pay for it. In an area in which firms – whether similar or different – are concentrated, people interact, either in their own or in other sectors. The proximity of firms becomes important; it can be predicted that an area will grow faster than another less densely populated area. Proximity for firms potentially enhances their performance.

Apart from knowledge spillovers due to firm proximity, there are also externalities from their contacts with an international network consisting of links with foreign buyers in exporting activities, and through ownership. The international network stimulates technological progress through a formal or informal transfer of technology that subsequently increases competitive advantages for firms.

In order to estimate the four factors previously discussed, we model technology (see Glaeser et al., 1992, for a similar approach). The level of technology A_{it} can be described as a function of specialization, diversity, international linkages, foreign linkages, and potential autonomous trends over time. Specialization can be measured by the concentration of an industry in a certain area, which according to MAR and Porter, will increase the rate of technological progress. Diversity measures the variety of activities that exists in an area, which according to Jacobs, speeds up the technological progress. International market linkages increase technological progress due to upgrading (Gereffi, 1999); and foreign linkages, according to Dunning, increase technological progress due to the internalization of knowledge.

More specifically, the degree of specialization is measured by sector firm density, where we distinguish between L&M scale firm density and small scale firm density. The diversity is proxied by a dummy measuring whether the firm is located in an urban or a non-urban area. The international network externalities variable is proxied by a dummy measuring whether the firms engage in exporting, and a dummy measuring whether the firm has a foreign partnership or is foreign owned. Apart from proxies for the main externalities of interest in this chapter, there may also be autonomous time trends in technological progress. In the sequel, we make several assumptions on $A_{i,t}$ varying from constant over time and type of firms to full variation over time and type of firm.

In sum, a firm's output is considered to depend both on factors internal to the firm (labor and capital) and on factors external to the firm, or dependent on both agglomeration economies or international linkages, as identified by A_{it}. These external factors enable a firm to be more productive, since it can attain higher output using the same amount of internal resources.

7.3.3 Data, measurement and final model

In our study we use the plant-level data from an annual manufacturing survey, in which the factory or plant is the unit of observation. Data on firm level production such as output (production value), labor, energy, export orientation, foreign ownership status, and district location are analyzed. To obtain data on proximity, the concentration of firms for each sub-district is used.

The output measure employed is production value, which refers to the total value of all products produced by a firm using a combination of production/input factors. Our input factors in this study are labor and energy. The energy data is used to substitute for capital, since complete data for machinery is unavailable. Energy expenses cover all types of fuel and energy to run machinery and equipment used in the manufacturing process.[18]

The use of energy in estimating production functions is found widely.[19] Concerning the relationship between capital and energy, the results of the studies vary. Berndt and Jorgenson (1973) find that energy and capital are complementary; Pindyck (1979) shows that energy and capital are substitutable; while Halvorsen and Ford (1979) show that energy and capital have either significant substitutability or have insignificant complementarity (cited from Berndt and Wood, 1979). Regarding the relationship between energy and labor, the findings are also varying. Berndt and Wood (1975) find that energy is a substitute for labor ($\sigma_{EL} = 0.65$) but that it is complementary with capital ($\sigma_{EK} = -0.32$). However, Griffin and Gregory (1976) find that energy is a substitute for both labor and capital (σ_{KE} and σ_{LE} are not statistically different from 1).[20] Meanwhile, Kemfert (1998)

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[18] Moreover, as the data of energy volume has various measurements, the energy expense data is used. However, a disadvantage of this data is that energy prices fluctuate.

[19] Studies by Cameron and Schwartz (1980), Field and Gerbenstein (1980), and Denny et al. (1981) find differences in estimated energy substitutions across industries and countries. Walton (1981) finds differences in substitution across US industries. Burney and Al-Matrouk (1996) find substitution between energy and capital in electricity generation and water production in Kuwait. Bamett et al., (1998) show that electricity is a weak substitute for both capital and labor in major Alabama (US) industries.

[20] Ehud and Melnik (1981) show that the substitutability between labor and energy increased until 1972; and from 1973 on, it decreased. Meanwhile, energy and capital were complementary from 1955–1972, but this complementarity weakened after 1973. A study on Pakistan shows that labor, capital, and energy appear as

reports that aggregate energy, capital, and labor are substitutes in German manufacturing. The substitution possibility between capital and labor conglomerates and energy is assumed to be 0.4; according to Lee, the substitution elasticity between capital and labor is 0.18; according to Manne and Richels, capital and labor against energy is 0.4; whereas several studies show that capital and labor have a positive result but less than 1 (cited from Kemfert, 1998).[21] From BPS data, the correlation between energy expenses and capital is 0.61. This correlation coefficient is not as high as we expected, since there are many missing data for capital.

Capital and labor are usually included as factors of production. Because the focus of this study is on the impact of externalities on firm performance, several variables relating to location and the international linkage effect discussed above will be added. These are the density of firms from the same sector, the density of firms from different sectors, exporter or non exporter, and foreign-owned or domestic. To allow for exogenous developments that occur over time, a time variable is included in the analysis (either as a trend-variable or a series of time dummies for individual years).

The data on production value and energy expenditures are in rupiah (Indonesian currency). The value of rupiah changes over time due to the inflation effect. To correct for inflation, the wholesale price index -WPI[22] (based on the constant value of 1993) is used to arrive at the real value of the variables in the analysis. Furthermore, we use the number of workers employed since information regarding the average number of working hours is not available.

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substitutes, natural gas and electricity as complements, and other fuels as substitutes (Iqbal, 1986). Caloghiro et al. (1997) find electricity a weak substitute for capital and labor in Greek manufacturing during the 1980s. Results indicate substitutability among factors in the short-run. In the long-run, electricity and capital are complements, as are labor and non-electrical energy.

[21] According to Koetse et al. (2007) estimated technological substitution potential, known as Morishima elasticities, varies considerably over different studies (based on a meta-analysis covering over 35 studies). The heterogeneity is mostly explained by essential differences in study characteristics, such as model specifications, data characteristics, regions, and time periods. Furthermore, they also found that Morishima elasticities are significantly different from zero for all regions and time periods, especially in the long-run.

[22] The Indonesian Wholesale Price Index (WPI) applied here is WPI in the manufacturing sector based on a 1993 constant price (1993 = 100). The 1993 constant price is computed, based on surveys conducted in 1993 in 126 cities in provincial and district government areas, using 373 commodities. WPI is classified into five groups; Agriculture: 40 commodities; Mining: 8 commodities; Manufacturing: 183 commodities; Importing: 50 commodities; Exporting: 46 commodities; Export is distinguished into Non-oil/gas: 43 commodities; Oil/gas: 3 commodities (BPS, 2002). The coefficient of WPI in the manufacturing sector from 1993 to 2003 is as follows: in 1993, the index was 100; in 1994 it was 110; in 1995 it was 122; in 1996 it was 126; in 1997 it was 131; in 1998 it was 217; in 1999 it was 268; in 2000 it was 278; in 2001 it was 309; in 2002 it was 339; and in 2003 it was 354. The index for 1994 to 1997 is the author's calculation, since the available data are only based on a 1983 constant price. In this calculation, adjustments were made to transform the 1983 constant price into a 1993 constant price (Source: Indonesian Financial Statistics, The Bank of Indonesia, December 2004; August 2003; November 2002; and December 1999).

The sample of this study is comprised of all furniture firms in Central Java that employ 20 or more workers and are usually referred to as large and medium scale firms (L&M).[23] As mentioned before, the data file was compiled from Indonesian wood furniture manufacturing firms and collected via the annual manufacturing surveys of The Indonesian Central Statistical Bureau (BPS). The data was taken at the individual company level from 1994 to 2003, in which each year approximately 200–500 wood furniture firms were recorded. The BPS staff (a group trained for data collection) assembled the data. However, as government officers, some behavior formalities may affect the way respondents have reacted to the recorded data. One possibility is the tendency of underreport their sales/ income. The other problem may appear is that the wood furniture sector is influenced by the season so that it may affect to the estimation of sales in a year or other related variables.

The variables used in this analysis are measured as follows:

- Production value (PRO) is the real total value of products produced in a year (in thousand Rp);
- Labor (LAB) is the average number of workers per working day in a year (in persons);
- Energy (FUE) is the real total value of all fuels and energy expenses in a year (in thousand Rp).

Location factors, international network factors, and time are treated as dummy variables:

- D_{Dens1} is a dummy for large and medium scale wood furniture firms' density in one sub-district (kecamatan) which equals 1 when a firm is located in an area with an L&M scale density > 0.5 and 0 otherwise;
- D_{Dens2} is a dummy for small scale wood furniture firms' density in one sub-district (kecamatan),[24] which equals 1 when a firm is located in an area with a small scale firms density exceeding 10 and 0 otherwise;

[23] The classification used by the BPS is that medium firms employ 20 to 99 workers, whereas large firms employ 100 or more workers.

[24] $Dens_1$ represents large and medium scale firm density which is determined based on the number of large and medium scale wood furniture firms in a km^2 area in a particular sub-district. However, $Dens_2$ represents small scale wood furniture firm density which is determined based on the number of small scale firms per km^2 area in a particular sub-district. The data of small scale firms is taken from the small scale survey done by BPS.

- D_{urb} is a dummy variable for urban firms, which equals 1 when a firm is a located in an urban area and 0 otherwise;
- D_{exp} is a dummy variable for exporters and non exporters which equals 1 when a firm is (partly) exporting and 0 otherwise;
- D_{for} is a dummy variable for foreign-owned firms which equals 1 when a firm has foreign shares and 0 otherwise;
- D_{t1} to D_{t10} are dummy variables for the respective years, constructed such that D_a equals 1 if $t=a$ and 0 otherwise.

Final model

The final model that we estimate is as follows:

$$\ln Y_{it} = \beta_0 - \beta_1 \ln\left(\beta_2 L_{it}^{-\beta_3} + (1-\beta_2)K_{it}^{-\beta_3}\right) + \beta_4 D_{Dens1} + \beta_5 D_{Dens2} + \beta_6 D_{urb} + \beta_7 D_{\exp} + \beta_8 D_{for} + \beta_9 D_{94} \ldots\ldots\ldots \beta_{18} D_{03} + e_{it} \quad (7.2)$$

The parameters relate to the parameters of the production function as follows:

$$\beta_1 = -\mu/\rho \;;\; \beta_2 = \alpha \;;\; \beta_3 = -\rho.$$

The parameter β_0 estimates the constant part of A_{it}. Parameters $\beta_4, \beta_5, \beta_6, \beta_7$ and β_8 capture the part of A_{it} that varies over types of firms and β_9 to β_{18} capture the time variation. In order to test whether the equation is characterized by constants return to scale and unitary substitution elasticity, a Wald test is applied to check whether the $\mu = 1$ and $\rho = 0$. Results are reported in Table 7.4.

7.4 The profile of the wood furniture industry in Central Java

This section provides a short description of the wood furniture industry in Central Java. Although the industry consists of L&M scale, small scale, and micro scale firms, the L&M firms are presumed to represent the industry, since there is no data available for small scale and micro scale firms.

The table below displays the development in the number of firms, number of workers employed, total production value, and the number of districts and sub districts where the L&M scale wood furniture firms are located.

Table 7.1 The development in some indicators of L&M scale wood furniture firms in Central Java from 1994 – 2003

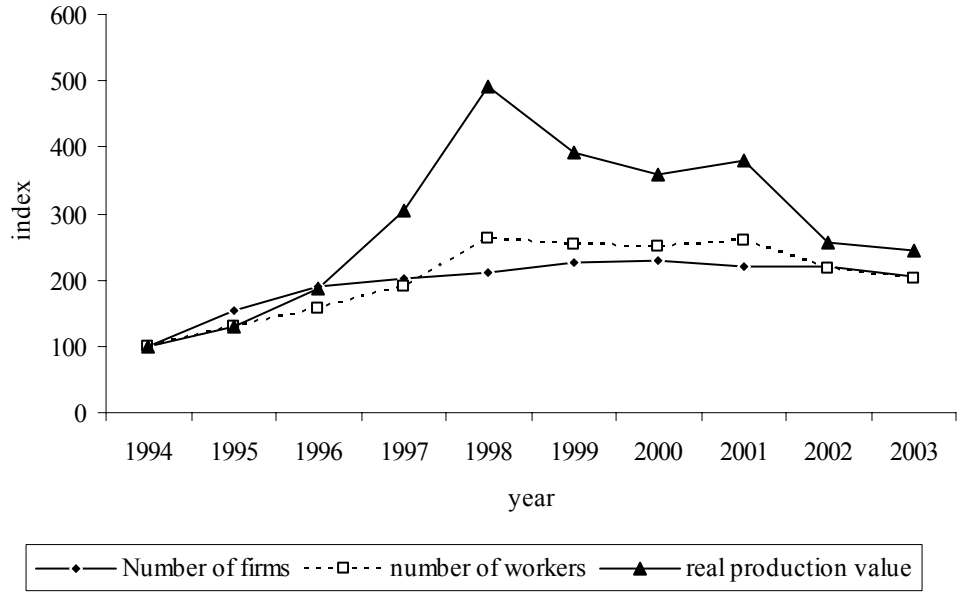
Year	Number of L&M scale firms			Number of workers	Real production value (in million rupiah)	Number of coverage areas	
	Total	M	L	Total	Total	districts	Sub-districts
1994	220	176	44	19,534	178,315	21	52
1995	339	286	53	25,120	229,259	25	67
1996	419	346	73	30,655	335,633	24	75
1997	447	346	101	37,169	540,489	25	80
1998	464	349	115	50,957	874,879	25	75
1999	500	383	117	49,667	696,538	27	79
2000	507	385	122	48,712	639,336	27	92
2001	483	359	124	50,378	679,368	26	88
2002	483	372	111	42,570	458,982	28	89
2003	448	340	108	39,614	432,950	25	75

Source: BPS 2004, processed by author.
Notes: this data covers all L&M firms in all areas in Central Java.

Table 7.1 shows that, from 1994 to 2000, the number of L&M scale firms in Central Java and the number of districts and sub-districts where the firms were located had expanded. The number of districts and sub-districts has not changed much since 2000. The real total production value of L&M scale firms grew by almost 50% annually from 1994 to 1998, compared to a reduction – nearly 12% – from 1999 to 2003. This growth happened together with a 22% growth in the number of firms between 1994 and 1998, compared to a reduction of 0.6% from 1999 to 2003, whereas the labor employed grew by almost 27% between 1994 and 1998, compared to a reduction of nearly 4.7% from 1999 to 2003. From 1997 to 1998 the wood furniture industry performed well, when many other Indonesian export products were affected by the onset of the economic crisis beginning in mid-1997. This industry enjoyed the devaluation of currency since the products became cheaper in the international market.

As discussed in Chapter 3, the number of firms, number of workers, and real total production value over time can be used to describe the life cycle of an industry. Based on 10 years of available data, it is possible to estimate the life cycle of the wood furniture industry in Central Java. Figure 7.1 illustrates how the industry developed since 1994 and grew towards a stage of maturity which was reached around 2000. In terms of the number of workers and real production value, the decline is more rapid after 2000. The current level of the maturity stage is tending towards decline.

Figure 7.1 The pattern of development in the number of firms, number of workers, and real production value from 1994 – 2003.



Source: BPS (2004).

A qualitative interview with the officer from the provincial industrial office indicates that the trend in the number of firms, number of workers, and production value after 2003 has tended to decline (own interview, 2007). The increase in competition from other Asian countries such as China and Vietnam, and the shortage in the wood supply nationwide are to blame as the causes of this decline. However, this change is also caused by changes in the world market demand which affect the industry and firms in all areas. By comparing different areas, the decline in terms of production value and number of workers occurred in all areas, but in relation to the number of firms, the decline in the number of L&M firms is found in Jepara, while the other clusters tend to *increase*. The isolated areas do not give a clear picture but nevertheless tend to decline. A detailed picture of the spatial distribution of the number of L&M scale firms can be seen in Table 7.2.

Table 7.2 Distribution of L&M scale firms in Central Java from 1994 – 2003 according to area

Year	Jepara		Klaten		Sukoharjo		Semarang City		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
1994	145	65.91	11	5.00	6	2.73	8	3.64	50	22.73	220	100.00
1995	234	69.03	15	4.42	9	2.65	11	3.24	70	20.65	339	100.00
1996	286	68.26	13	3.10	13	3.10	29	6.92	78	18.62	419	100.00
1997	306	68.46	13	2.91	17	3.80	29	6.49	82	18.34	447	100.00
1998	322	69.40	13	2.80	26	5.60	26	5.60	76	16.41	463	100.00
1999	330	66.00	32	6.40	27	5.40	30	6.00	80	16.03	499	100.00
2000	312	61.54	36	7.10	27	5.33	32	6.31	100	19.72	507	100.00
2001	281	58.18	49	10.14	30	6.21	32	6.63	90	18.67	482	100.00
2002	261	54.04	50	10.35	38	7.87	33	6.83	101	20.91	483	100.00
2003	235	52.46	51	11.38	40	8.93	41	9.15	81	18.08	448	100.00

Source: own calculations based on BPS (2004).

The table reveals that more than half of the L&M scale firms are concentrated in Jepara, whereas about 18% of the firms are spread out in about 20 districts and over 50 sub-districts outside Jepara. That means about 18% of the firms are isolated firms. As mentioned in Chapter 1, Jepara, Klaten, Sukoharjo, and Semarang City are the areas where L&M wood furniture firms are clustered. Jepara is the largest furniture cluster, whereas Klaten and Sukoharjo are much smaller. Despite the number of L&M scale firms, around 6,000 small scale firms are found in Jepara, 570 small scale firms in Klaten, and 158 small scale firms in Sukoharjo (BPS, 2002). This does not include micro-scale firms. However, small scale firms are rarely found in Semarang City. Semarang City is the capital of the Central Java province and a major business center but most importantly, it is a port city for the export of wood furniture products.

We observe from Figure 7.1 that the life cycle of the wood furniture industry in Central Java shifted towards a maturity stage after year 2000 and is tending presently to decline. In contrast to Jepara, in which the number of L&M firms has declined after 1999, the number of L&M firms in other clusters (viz.in Klaten, Sukoharjo and Semarang City) has increased (Table 7.2). The description of the firms' sizes in terms of average number of labor and average production value per firm can be seen in Table 7.3.

Table 7.3 The development of firm size from 1994 – 2003 according to location

Year	Jepara		Klaten		Sukoharjo		Semarang City		Other		Total	
	lab	prod	lab	prod	lab	prod	lab	prod	lab	prod	lab	prod
1994	64	450	139	921	155	885	142	626	134	1,853	89	811
1995	58	486	96	663	101	560	163	1,090	104	1,264	74	676
1996	60	623	107	727	102	575	117	825	95	1,496	73	801
1997	70	881	111	1,648	106	1,641	123	1,082	110	2,320	83	1,209
1998	87	849	95	2,398	89	841	168	2,911	167	3,415	105	1,429
1999	77	672	54	618	93	677	171	2,959	157	2,192	95	1,050
2000	72	750	63	986	119	1,442	154	1,872	160	2,708	96	1,261
2001	75	627	48	599	148	945	169	2,619	190	2,844	104	1,190
2002	72	532	48	514	115	867	166	2,292	114	1,828	88	948
2003	69	567	50	523	109	889	167	2,327	120	1,736	88	963

Source: own calculations based on BPS (2004).
Note: The average amount of labor (lab) is measured in persons, whereas the average production value (prod) is measured in millions of rupiah.

As shown above in Table 7.1, using the local classification of firm, the majority of firms, about 75% to 84%, are medium scale with a labor force of between 20 and 99 workers. The remaining firms employ more than 100 workers but rarely have more than 500 workers. Approximately 1 to 5 firms over the period of one year have over 500 workers. From the average number of workers and production value, the firms located in Semarang City and "other areas" are relatively large compared to the other districts. This evidence supports previous findings by Visser (1996), who states that small firms tend to be clustered, whereas large ones tend to be isolated/dispersed or located in business centers. However, this study departs from Visser's argument as it shows that, in isolated areas, firms tend to decrease in size that can be seen from the average number of workers and production value over time. Moreover, the L&M firms are found clustered not only in Semarang City, but also in the less small scale density clusters of Klaten and Sukoharjo.

7.5 Results

This section describes the results of the estimation of the empirical analysis on the effect of cluster/agglomeration factors and international linkage factors on the production value of the large and medium (L&M) scale wood furniture firms in Central Java, Indonesia; it also presents the estimation of the production function and the interpretation.

7.5.1 Estimation of the production function

The results of the estimations of the model are presented in Table 7.4, consisting of 7 alternative specifications of our production function model. In Eq. 1 we want to see how the relationship between input factors (labor and energy expenditure) and production value

is described. In Eqs. 2 and 3 we control for autonomous technological progress by adding a time trend and a complete set of year dummies, respectively. In Eq. 4, we test for the effect of different types of agglomeration externalities. In Eq. 5, we test for the effect of the international network externalities. In Eq. 6, besides the effects of agglomeration economies, we include the effect of having international linkages. Finally, in Eq. 7 we test the effect of agglomeration, international linkage, and time. The analysis is based on L&M wood furniture firms for the period 1994 to 2003.

Table 7.4 CES[25] production function for production value

	Equation						
	1	2	3	4	5	6	7
Constant	7.51***	7.48***	7.40***	7.41***	7.63***	7.54***	7.43***
	(56.15)	(56.12)	(51.17)	(59.55)	(60.00)	(62.18)	(56.92)
Economies of scale	1.05***	1.05***	1.05***	1.05***	1.02***	1.01***	1.01***
	(77.95)	(77.90)	(77.89)	(75.59)	(72.58)	(70.23)	(70.03)
Substitution	–0.01	–0.02	–0.03	–0.06	–0.04	–0.08	–0.11
	(–0.20)	(–0.23)	(–0.45)	(–0.92)	(–0.62)	(–1.13)	(–1.43)
Distribution	0.75***	0.75***	0.76***	0.77***	0.77***	0.79***	0.81***
	(12.88)	(13.03)	(13.33)	(14.73)	(13.96)	(15.42)	(16.18)
Dummy of L&M scale firms' density				0.24***		0.22***	0.22***
				(8.51)		(7.87)	(7.92)
Dummy of Small scale firms' density				–0.01		–0.02	–0.02
				(–0.17)		(–0.66)	(–0.52)
Dummy of Urban				0.07		0.17***	0.19***
				(1.42)		(7.59)	(8.05)
Dummy of Exporter					0.22***	0.09*	0.09*
					(3.11)	(1.79)	(1.77)
Dummy of Foreign ownership					0.20***	0.17***	0.17**
					(8.70)	(2.57)	(2.44)
Trend		0.01**					
		(2.46)					
Dummy of Year 1995			0.08				0.09
			(1.25)				(1.43)
Dummy of Year 1996			0.16 ***				0.15***
			(2.69)				(2.67)
Dummy of Year 1997			0.19***				0.21***
			(3.21)				(3.64)
Dummy of Year 1998			0.20***				0.22***
			(3.35)				(3.77)
Dummy of Year 1999			0.14**				0.14**
			(2.45)				(2.53)
Dummy of Year 2000			0.18***				0.17***
			(3.11)				(2.89)
Dummy of Year 2001			0.24***				0.29***
			(4.23)				(5.06)
Dummy of Year 2002			0.13**				0.15***
			(2.31)				(2.61)
Dummy of Year 2003			0.17***				0.15***
			(2.86)				(2.64)
R^2	0.70	0.70	0.70	0.71	0.70	0.71	0.71
N	4,307	4,307	4,307	4,307	4,307	4,307	4,307
Wald Test "μ = 1" (F-stat)	15.02***	14.73***	13.47***	12.11***	1.25	1.06	0.50
Wald Test "ρ = 0" (F-stat)	0.04	0.05	0.20	0.84	0.38	1.27	2.06

*Note: t-statistics are between parentheses. Stars refer to statistically significance: ***p< 0.01; **p<0.05; *p< 0.10*

[25] The results for the Cobb-Douglas model (restricting ρ to be equal to zero) can be seen in Appendix 7A. Given the relatively small deviations of ρ and μ from 0 and 1, respectively, the results are strongly comparable.

The results for our key parameters of interest reveal that estimation of parameters is quite good in which the coefficient of constant, μ, ρ and α, change slightly in different equations but tend to be stable. All coefficients except ρ are significant at a 1% level for the two-tail test. The system weighted R^2 is 0.70. μ is close to 1 and ρ is close to zero, showing that the relationship between labor and energy is in a constant return to scale, which is supported by the Wald test. The estimate of α = 0.80 demonstrates the dominant role of labor compared to energy. Meanwhile, the elasticity of substitution between labor and energy costs σ = 1.01 is positive, which means that labor and energy are relatively good substitutes.

The time variable produces a positive coefficient in the regression (significant at a 5% level in the CES form), suggesting some generalized improvement in productivity over the 10-year study period. The magnitude of this improvement, due to technological changes or improved methods and procedures is about 1% per year, but the improvement is prominent, especially in 1997, 1998, and 2001.

The results above reveal interesting findings. Concerning L&M firm proximity, the results are consistent with the importance of localization externalities in which firms take advantages from the knowledge spillover from other L&M firms, thus supporting the prediction of the MAR model. However, in regard to small firm proximity, the results do not support the MAR prediction, meaning that geographical specialization does not affect production value growth. In addition, concerning clustering of diverse firms, Eq. 7 shows a significant effect, but from Eq. 5 the effect is not significant, therefore Jacob's prediction that geographical diversity influences production value growth is not supported by the results. Meanwhile, when we examine the effects of international linkages, Eq. 7 shows that exporting firms have higher performance; this finding supports Pack's argument. The impact of exports is hurt by the agglomeration effect, in which the coefficient is higher in Eq. 5, where the equation considered only international linkages as the dummies, since many exporting firms are found in Jepara, a district dominated by small scale firm density. On foreign ownership, from Eq. 7, foreign-owned firms have higher productivity, thus supporting Dunning's argument.

Based on these results we can predict that firms in an area with a high density of L&M scale firms have 22% greater productivity than the other firms; this coefficient is not much different when combined with international network factors. The productivity of firms located in small firm density is not significantly different from other firms. The productivity of firms in an urban area is insignificantly different from other firms, but they

are 19% higher than their counterparts when combined with the impact of an international linkage. Without considering the international network and time factors, the productivity difference is not significant. The productivity increases when combined with the international network and time factors. If we compare to cluster factors the role of an international linkage is stronger. For instance, after considering location factor, exporting firms are 9% higher in productivity than other firms; it declines from 22% as the impact of location (urban area or small scale firm density). Foreign-owned firms are 17% higher in productivity than their counterpart, a slight decline from 20% when not considering location factors.

The estimation has a good explanatory capacity. Table 7.4 shows the model indicating that some type of spatial, international linkage and time correlation is present in the data. From the analysis above, most of the hypotheses formulated in Section 7.2 are supported by the summarized results in Table 7.5.

Table 7.5 Results of hypotheses tests for L&M firms

	Hypotheses	Results
H-7.1	External economies.	
H-7.1 a	The spatial clustering of L&M firms from the same sector has a positive effect on firm performance.	accepted
H-7.1 b	The spatial clustering of small scale firms from the same sector has a positive effect on firm performance.	rejected
H-7.2	The clustering of firms from different sectors has a positive effect on firm performance.	rejected
H-7.3	Exporting firms have higher performance than non-exporting firms.	accepted
H-7.4	Foreign-owned firms have higher performance than non-foreign-owned firms.	accepted

From the table above, we conclude that hypotheses H-7.1a, H-7.3, and H-7.4 are supported by the results of the analysis, whereas hypothesis H-7.1b and H-7.2 are not supported by the results. In other words, the clustering of L&M scale specialized firms and a linkage to the international network have a positive impact on firm performance, whereas the clustering of small scale specialized firms and the clustering of diverse firms have insignificant impact on firm performance.

7.5.2 Interpretation

The model proposed and tested in this study explains a substantial portion of the productivity differences between groups of firms over the 10-year period covered by the data. The fully specified model accounts for about 70% of production value variation.

Probably most of the remaining variables are due to special factors, in particular factory factors, such as management or other factory-specific situations. From the result above, several important aspects need to be underlined.

First, the dominant share of labor over energy described by the production function indicates that the wood furniture industry in Central Java is rather labor intensive. The positive elasticity of substitution between labor and energy denote that the use of energy representing the use of machinery in the production process could, to a certain extent, be replaced by labor. Meanwhile, the constant return to scale of the production factor implies that doubling all inputs will double output. As traditional products, the wood furniture industry is characterized by low barriers to entry or exit from the industry, which also points to the high competition of the industry. A large gap in production value exists between the largest and the smallest firms in this industry; numerous firms only produce in real value, about 20 million rupiah a year, whereas the largest firms produce more than 4,000 times that of the smallest firms. In terms of labor, the largest firms employ more than 100 times the number of laborers employed by the smallest firms in this group. Noteworthy is that the production process (by most of the L&M firms) is supported by about 9,000 small scale firms scattered across the province but concentrated in Jepara that employ 5 to 19 workers. This number does not include the micro-firms, which have fewer than five workers. In other words, the technology applied by the firms in the wood furniture industry is heterogeneous; several large and medium firms apply relatively modern technology, but many medium firms use fairly basic technologies and are also supported by small scale firms that use very simple and traditional technology.

Second, as discussed in Section 7.2, the collocation of firms may stimulate the creation and diffusion of knowledge. From testing the hypotheses, we can conclude that firms located in a cluster with high L&M firms from the same sector seem to be more productive. What is striking is that the clustering of small scale firms from the same sector has no effect on L&M firm production value. The evidence presented above suggests that specialization of L&M firms – not specialization of small scale firms – contributes to L&M firms productivity. There are at least two reasons that may explain this result. (1) There is a technological gap between small scale firms and L&M scale firms from the same sector, as discussed above, so that quality products made by small firms cannot fulfill the requirements of L&M firms. (2) L&M firms prefer to do business with medium sized suppliers rather than small scale suppliers, because it is more efficient; it means that L&M scale firms benefit from technological spillovers of other L&M scale firms but not from

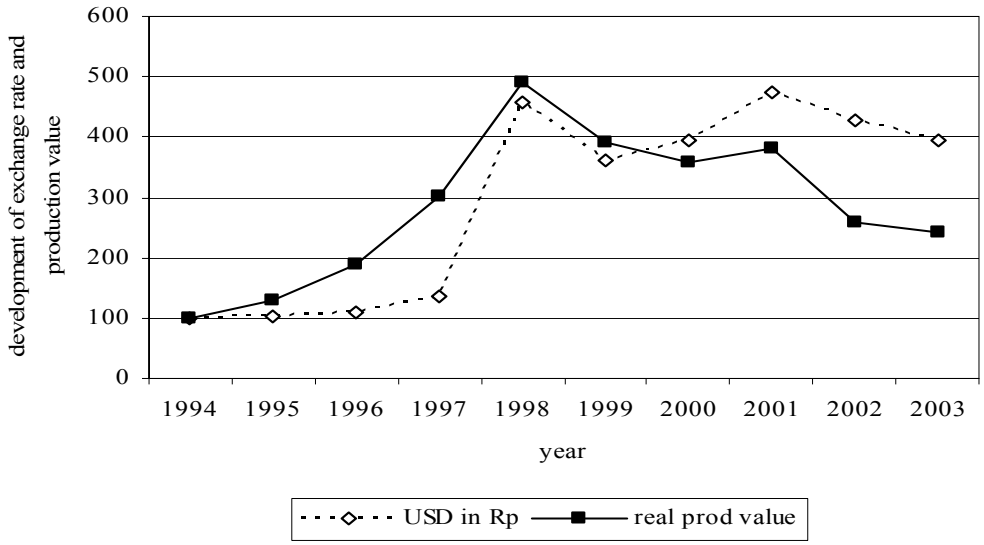
small scale firms. According to Shaver and Flyer (2000), firms with relatively more advanced technology, usually L&M scale firms, will obtain minimal benefits from access to technology from neighboring firms that have poor technology. Furthermore, firms located in urban areas do not differ markedly from firms outside the urban areas because many domestic firms are found in other urban city besides Semarang city. The impact of diversity increases firm performance only when it is connected with an international linkage.

Third, in Section 7.2, we hypothesized a linkage with foreign partners by being inserted in a global buyer value chain or being involved in an equity partnership, which increases firm performance. These two hypotheses – tested using the Central Java L&M wood furniture firm data – support the arguments. Being linked with foreign buyers or a foreign partner might function as an effective channel of knowledge diffusion and interactive learning, because they can provide a common knowledge base via product requirements or a transfer of specific technology. As a traditional industry, firms in the wood furniture industry can survive with a certain level of technology and rely largely on labor. However, increasing competition in the world market requires continuous upgrading, not only from the production process and product, but beyond. Wood furniture products are fashionable and customer demands change drastically over time. For firms, product development, especially in relation to the design and choice of technology, is important in giving a competitive advantage in the international market as well as within the domestic market in competing with imported products. Wood furniture firms therefore need to take advantage of the possibility of being inserted into global value chains or partnerships with foreigners.

As mentioned above, the wood furniture industry during the period of observation is growing. From 1994 to 2003, the production value of firms has increased significantly, ranging from 14% to 29%, compared to the production value in 1994. A profound increase occurred in 1997 and 1998, and particularly in 2001. During the 10 years of observation, the wood furniture industry in Central Java has grown an average of 1% per year together with the growth in world demand. However, when compared to the growth in world demand, the growth of the wood furniture industry in this region is much lower. Similar to many Asian countries, the industry benefited from the Indonesian currency devaluation. In mid–1997 continuing to 1998, Indonesia was hit hard by the monetary crisis, in which the rupiah was devaluated against the US dollar by more than 300%; the ensuing reduction in the price of furniture products in the international market led to a soar in demand. In 2001, the Indonesian rupiah was devaluated once again, causing an increase in demand. The changes in production value and the exchange rate are shown below in Figure 7.2. From

this figure, we can observe that after 2001 the wood furniture production value of L&M firms in Central Java was influenced by the changes in the exchange rate, but they have become less sensitive to the exchange rate changes afterward. Some possible explanations for the less sensitivity of the demand to exchange rate are: first, the appreciation of dollar the dollar that started to rise in mid–1997 that caused the world market demand to adjust to the changes after some time. Second, during the boom, the increasing demand in the world market was responded by the hand made suppliers with low technological products, in which the quality was relatively low. Later, most of these products were not followed by repeat demand. Third, the increasing number of competitors that offer better quality of product since they used better technology, with a better price. Forth, the increasing price of domestic inputs particularly wood while most of buyers do not want to pay more.

Figure 7.2 The pattern of development of US $ in rupiah and production value



To summarize, firms can increase their productivity when they are located close to L&M firms but not by being near to small scale firms. Moreover, firms can increase their productivity by establishing networks with foreign buyers or equity partnerships.

7.6 Conclusion

The aim of this chapter was to test whether different types of agglomeration economies and involvement in the international network stimulate the performance of L&M wood furniture firms. Our empirical analysis shows that L&M firm density, urban location, and linking to the international network by exporting, or by establishing foreign-owned

partnerships increases the production value. The outcome suggests that firms are more productive when located in a region with a relatively high number of L&M wood furniture firms. Moreover, firms are more productive when linked to the international network in order to become exporters or build partnerships with foreign-owned firms. However, being located in urban or small scale firms' density area does not make any difference in productivity.

L&M firm density and international network linkages, in terms of exporter and foreign ownership, have important roles in knowledge spillovers. Knowledge spillovers from L&M sized firms are essential to the improvement of efficiency, which supports the MAR argument. Knowledge spillovers from an international linkage support the thesis of Gereffi and Dunning.

A more in-depth examination might shed further light on how agglomeration and international linkage affect firm performance. The findings concerning the impact of localization economies cast an interesting light on the key question of how the location of L&M firms in a more specialized region is beneficial for firms, while the location of small scale firms in a more specialized region is not beneficial. Moreover, it is helpful to know how the impact of the clustering of diverse firms has a significant effect when related with linkages to the international network. Empirical research is therefore necessary in order to answer this highly intriguing question.

In addition, more research needs to focus on the unraveling of the impact of agglomeration economies and international linkage factors on firm performance. Our analysis shows these factors to have a highly-interrelated effect on the performance of firms. We believe that the geographical implications of these international linkage factors should be further explored empirically in order to gain a better understanding of their impact. Such an approach would most certainly benefit by taking a more dynamic perspective, in which the spatial evolution of an industry is analyzed in terms of innovation and diffusion of competence. This research only begins to explore this issue existing in the research of industrial clusters.

In the estimation above we used the CES production function. Because the production function is firm specific, the use of panel data would be beneficial in the application of this model. Furthermore, in this chapter we analyzed firm performance based on production value. In the future, value added can be used as an indicator of firm performance.

Appendix 7A. Results for Cobb-Douglas production function

To provide some more insight into the robustness of the impact of externalities on firm performance, this Appendix carries out an alternative analysis using the Cobb-Douglas production function. The model specification to estimate the externalities effects and the estimation results is based on $Y_{it} = A_{it} L_{it}^{a} K_{it}^{(1-a)}$, where Y_{it} is output, A_{it} is a technological constant, L_{it} is labor, K_{it} is capital, a and $1–a$ are distribution parameters which are equal to the marginal productivity of labour and capital, respectively. Considering all variables discussed in Section 7.4, the final model is developed as:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln L_{it} + \beta_2 \ln K_{it} + \beta_3 D_{Dens1} + \beta_4 D_{Dens2} + \beta_5 D_{urb} + \beta_6 D_{\exp} + \beta_7 D_{for} + \\ + \beta_9 D_{94} + ... + \beta_{18} D_{03} + e_{it} \qquad (7A.1)$$

The parameter β_0 estimates the constant part of A_{it}. Parameters $\beta_3, \beta_4, \beta_5, \beta_6$ and β_7 capture the part of A_{it} that varies over types of firms, and β_9 to β_{18} capture the time effects. Seven alternative equations are estimated to provide a description of the different effects of externalities. The Wald Test is applied for this model to check whether $\beta_1 + \beta_2 = 1$ (viz. whether there are constant returns to scale).

The results for the Cobb-Douglas production function are – not surprisingly – very similar to those of the more general CES production function. The coefficients of estimation from seven alternative equations are presented in Table 7.A.1. Equation 1 presents the results when external factors are not considered, Eqs. 2 to 5 when the estimations partially consider externality factors and the time factor, Eq. 6 when all externality factors are considered regardless of time, and Eq. 7 when external factors and time are estimated jointly.

Table 7A.1 Cobb-Douglas production function for production values

	Equation						
	1	2	3	4	5	6	7
Technological constant	7.48***	7.46***	7.35***	7.32***	7.56***	7.43***	7.29***
	(128.53)	(126.44)	(96.86)	(106.73)	(127.56	(105.20)	(85.35)
Distribution Labor	0.77***	0.78***	0.78***	0.76***	0.75***	0.74***	0.74***
	(37.62)	(37.51)	(36.91)	(37.35)	(36.41)	(36.35)	(35.70)
Distribution Energy	0.28***	0.27***	0.28***	0.29***	0.27***	0.27***	0.27***
	(23.61)	(22.60)	(22.22)	(22.97)	(2.55)	(21.44)	(20.58)
Dummy of L&M scale firms' density				0.24***		0.22***	0.22***
				(8.49)		(7.82)	(7.86)
Dummy of Small scale firms' density				–0.01		–0.02	–0.02
				(–0.26)		(–0.76)	(–0.65)
Dummy of Urban area				0.08*		0.17***	0.18***
				(1.60)		(7.55)	(7.97)
Dummy of Exporter					0.22***	0.10***	0.10***
					(3.11)	(2.00)	(2.04)
Dummy of Foreign ownership					0.19***	0.17***	0.17***
					(8.74)	(2.59)	(2.46)
Trend		0.01**					
		(2.45)					
Dummy of Year 1995			0.08				0.09
			(1.25)				(1.43)
Dummy of Year 1996			0.16***				0.15***
			(2.66)				(2.58)
Dummy of Year 1997			0.19***				0.20***
			(3.15)				(3.48)
Dummy of Year 1998			0.20***				0.22***
			(3.29)				(3.62)
Dummy of Year 1999			0.14**				0.14**
			(2.39)				(2.37)
Dummy of Year 2000			0.18***				0.16***
			(3.05)				(2.75)
Dummy of Year 2001			0.24***				0.28***
			(4.17)				(4.90)
Dummy of Year 2002			0.13**				0.14**
			(2.28)				(2.51)
Dummy of Year 2003			0.17***				0.15***
			(2.84)				(2.56)
R^2	0.70	0.70	0.70	0.71	0.70	0.71	0.71
F-Stat	4,986.54	3,330.03	912.41	2,073.71	2,567.91	1,513.75	668.45
N	4,307	4,307	4,307	4,307	4,307	4,307	4,307
Wald Test $\alpha + \beta = 1$ (F-stat)	15.15***	14.92***	13.98***	12.66***	1.50	1.32	0.78

*Note: t-statistics are between parentheses. Stars refer to statistically significance: ***p< 0.01; **p<0.05; *p< 0.10.*

The table illustrates that the hypotheses that the sum of α and β is 1 cannot be rejected in the last three joint equations. In general, the production value data fits the Cobb-Douglas specifications. The table above examines the robustness of the findings by reporting the results in different equations. It is important to point out that the estimation system is relatively superior. This result suggests that the CD specification for the production function is appropriate for the production function estimation of the wood furniture industry in Central Java. The finding notes the similarity of the coefficients for all the variables except ln (*L*) and ln (*K*), regardless of the estimated functional form. Hypotheses tests show that the CES form is not significantly different from the Cobb-Douglas (at the 5% level).

Chapter 8

Explaining Firm Performance

8.1 Introduction

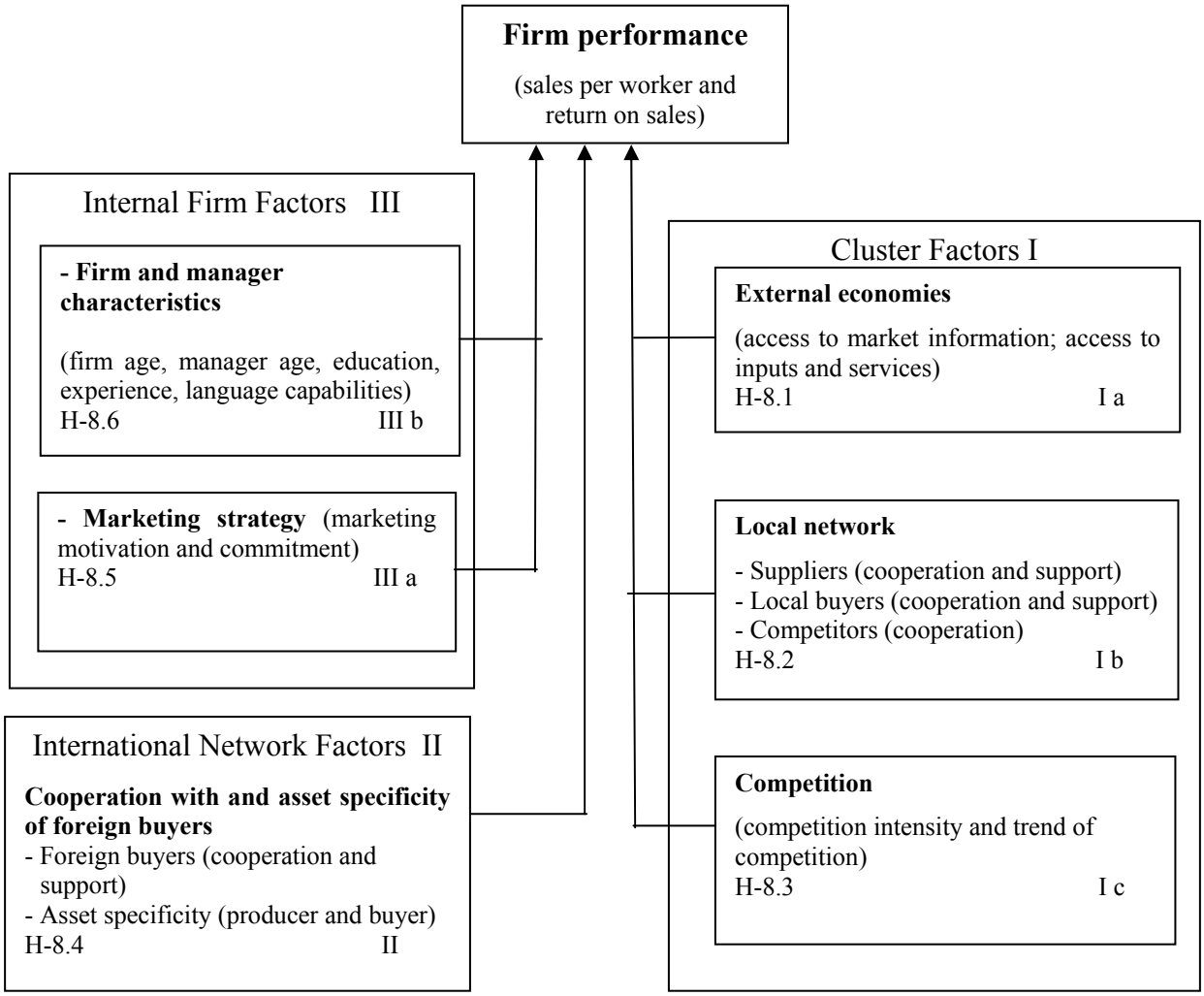
Externalities as they have been explored in Chapter 7 play an important role in determining firm performance. In this chapter, we will examine the impact of externalities more in-depth by using more specific indicators. In addition to the impact of cluster factors and international linkage factors, this chapter also accounts for internal firm factors. As suggested by cluster theory, cluster externality factors such as external economies and joint action, determine firm performance (Schmitz, 1995). Furthermore, the international network – which emphasizes the importance of a firm's interconnections in international linkages – affects firm performance (Gereffi, 1999). The Contingency Theory moreover proposes that, besides environmental factors, a firm's performance is determined by internal factors such as firm characteristics, entrepreneurial characteristics, and firm strategies (Aaby and Slater, 1989; Zou and Stan, 1998). This chapter applies an integrative framework to examine the contributions of cluster factors, international linkage factors, and internal firms' factors on firm performance. The primary question put forward in the present research is: Do external economies, cooperation with local firms, competition, and cooperation with foreign buyers, marketing strategies, and firm and entrepreneur characteristics positively affect a firm's performance? The study focus is on firms in four clusters in Central Java (Jepara, Klaten, Sukoharjo, and Semarang City) – with Jepara firms as the benchmark – and we will test hypotheses derived from integrating the three theories. The study is supplemented by an analysis of the impact of externalities on small firms from the Jepara cluster.

Stepwise regression analysis is applied to partially examine the impact of each group of factors, whereas the structural equation model (using the AMOS program) will be used to analyze the simultaneous impact of: external economies, local cooperation, competition, and cooperation with foreign buyer, marketing strategies, and firm/entrepreneur characteristics on firm performance. The findings presented were obtained using a survey circulated to a number of large and medium (L&M) scale furniture firms from four clusters. In order to reduce bias, interviews were conducted to provide an opportunity to recheck answers to several questions during the interviews. A test was also done focusing on small scale firms in Jepara to observe whether there is a difference between small and L&M scale firms in Jepara. Previous studies have usually applied the cluster approach and global value chain approach separately. Due to advantages and disadvantages of both methods, this research provides a new approach by integrating both methods. This is the study's contribution, where in Section 8.2, the proposed model and research hypotheses are described. Section 8.3 explains the research methodology and Section 8.4 conducts a cluster comparison for large and medium scale firms. Section 8.5 explains firm performance through external and internal firm factors and Section 8.6 gives an in-depth analysis of the determinants of firm performance. Section 8.7 elaborates on the differences in these determinants between small and L&M firms, and Section 8.8 focuses exclusively on small scale firm performance. Discussion follows in Section 8.9, while Section 8.10 concludes.

8.2 Research hypotheses

The model of firm performance has been described in Chapter 5 and several hypotheses concerning firm performance enhancement have been formulated and explained. Figure 8.1 repeats the conceptual scheme that was central to Chapter 5.

Figure 8.1 The operational model for the analysis of firm performance



This framework will be used to explain the performance of the L&M scale and small scale Jepara firms. The L&M firms investigated in this chapter come from 4 different clusters in Central Java, which are Jepara, Klaten, Sukoharjo, and Semarang City. Since most of the small scale firms have neither foreign buyers nor a marketing strategy, to examine the firm performance of the small scale firms we only consider cluster factors and firm and entrepreneur characteristics. Below we further explain the elements in Figure 8.1.

8.2.1 Cluster factors (I)

(I a.) External economies and firm performance

As discussed in Chapter 3, clustering firms enjoy external economies (Visser, 1996; Rosenthal and Strange, 2003). Agglomeration or clustering encourages firms to specialize, attract suppliers and buyers, and generate a pool of specialized workers. The cost saving

from this proximity is enjoyed by all firms in the cluster. External economies are important for growth; and many studies confirm that external economies increase firm productivity (Lall et al., 2001; Schmitz, 1999; Nadvi, 1996). Meanwhile, Bennett and Smith (2002) argue that small firms develop strategies to seek specialization and differentiation of their products and services, and diversification of their customers. As the majority of research indicates that external economies has positive effect on firm performance, it is hypothesized in H-8.1 that:

H-8.1 External economies positively affect firm performance, which is split into:
H-8.1a. Access to market information positively affects firm performance.
H-8.1b. Access to common inputs and services positively affects firm performance.

(I b.) Local cooperation and firm performance

Literature documents that inter-firm cooperation is studied widely and the findings provide evidence that cooperation impacts on performance (Powell, et al., 1996; Combs and Ketchen, 1999; Stuart, 2000). Due to owning limited resources, the cooperation strategy is commonly applied to a technologically-based industry (Powell et al., 1999; Chang, 2003). However, the proximity among firms also creates a conducive environment for cooperation. Within clusters, cooperation increases a firm's capability to grow (Rabellotti, 1999). In local clusters cooperation among firms, including competitors, can stimulate knowledge development and utilization, increase the volume and quality of goods and services, and expand markets (Jorde and Teece, 1989). Increasing pressure from international markets requires cooperation among firms to work together to make products of an international standard, joint marketing, promotion, etc. Cooperation positively influences firm performance and, together with a favorable market environment, contributes to a cluster's recovery (Rabellotti, 1999). However, not all firms cooperate successfully (Lorange and Roos, 1991; Okamuro, 2004). As the majority of research indicates that local cooperation has positive effect on firm performance, therefore, it is hypothesized in H-8.2 that:

H-8.2 Local cooperation positively affects firm performance, which is split into:
H-8.2a. Cooperation with local buyers positively affects firm performance.
H-8.2b. Cooperation with subcontractors positively affects firm performance.
H-8.2c. Horizontal cooperation positively affects firm performance.

(I c.) Competition and firm performance

The important role of competition in explaining firm performance is widely studied in the literature. It is oftentimes argued that market competition forces firms to be efficient (Brown, 2000) and to reduce their costs (Spence, 1984). Although competition and cooperation are regarded as two paradoxical concepts (Poon, 2002), increasing globalization nevertheless forces firms to cooperate. Meanwhile, clustering increases competition and the more intense the rivalry, the better (Porter, 1990, 1998; Glaeser, et al., 1992). A cluster fosters cooperation and competition among firms, thereby supporting the competitive advantages of the cluster and the individual firms too. Local competition enables the transfer and adoption of the best things from others, as well as innovation within clusters. According to Porter, rivalry or competition should be encouraged, since competition is regarded as the most important determinant of competitive advantage (Porter, 1990). However, research in Africa shows that intense competition has negative impacts on performance (Meyer-Stammer, 1998). As the majority of research indicates that competition has positive effects on firm performance, it is hypothesized in H-8.3 that:

H-8.3 Competition positively affects firm performance.

8.2.2 International Linkage Factors (II)

Cooperation with foreign buyers and firm performance

Cooperation among firms has been viewed as a powerful determinant of the competitive advantage of a cluster and the individual firms in this cluster (Piore and Sabel, 1984; Boari et al., 2003). Furthermore, vertical cooperation with foreign buyers is important as it increases international market access and provides the opportunity for firm upgrading (Bairs and Gereffi, 2001). In relationship with foreign buyers, reciprocal investments by a supplier are often able to attract more commitment from the buyer. In this relationship, exchange partners are willing to exert effort to maintain the long-term health of the exchange. Asset specificity can be made to protect its differentiated assets (such as unique technology and know-how) from falling into the hands of competitors. When transactions are supported bilaterally, the threat of opportunism by either party decreases. Asset specificity may cause switching costs when initial partners do not perform well. When asset specificity is low, firms need fewer costs to protect their know-how from competitors. In this case, firms as well as competitors, can use generally-available knowledge.

Meanwhile, in his study on the automobile industry, Dyer (1996) suggests that, in the tightly integrated production network characterized by proximity and a high level of inter-

firm human "co-specialization," asset specificity leads to better performance; furthermore, Artz and Brush (2000) clarify that asset specificity and environmental uncertainty directly increase coordination costs, but also lower exchange costs. However, the opposite result is presented by Artz (1999) from his study, as he revealed that specific investments have negative effects on performance indicators. As the majority of research indicates that linkages with foreign buyers have positive effects on firm performance, it is hypothesized in H-8.4 that:

H-8.4 Linkages with foreign buyers positively affects firm performance; this is split into:
H-8.4a. Cooperation with foreign buyers positively affects firm performance.
H-8.4b. Asset specificity in relationships with foreign buyer positively affects firm performance.

8.2.3 Internal firm factors (III)

(III a.) Marketing strategies and firm performance

There is a plethora of studies done on the relationship between marketing strategies and performance of domestic firms. In the export performance literature, many scholars also cite marketing strategy as an important determinant of firm performance (Madsen, 1987; Aaby and Slater, 1989; Chetty and Hamilton, 1993; Styles and Amber, 1994; Gemunden, 1991; Zou and Stan, 1998; Voerman, 2003). In their review studies, each scholar positioned *marketing strategy* differently when remodeling the determinants of firm performance, because they emphasized different aspects of it. Voerman (2003), for instance, positioned marketing strategy as determining performance and placed it at the center of the model under export activities. She discovered that export activities cover a firm's behavioral orientation, competitive and expansion strategies, behavioral commitment of resources, and marketing mix variables. Among many aspects of marketing strategy, promotional activities (Shoham, 1996) and marketing commitment (Evangelista, 1994) are important. However, studies show that the role of marketing strategy has various effects on a firm's performance, both for SMEs from developed countries and those in developing countries. As the majority of research indicates that marketing strategies have positive effects on firm performance, therefore, it is hypothesized in H-8.6 that:

H-8.5 Marketing promotions and marketing commitments positively affect firm performance, which is split into:
H-8.5 a. Marketing promotions positively affect firm performance.
H-8.5 b. Marketing commitments positively affect firm performance.

(III b.) Firm and entreprenurial characteristics

Although a firm's characteristics can encompass many dimensions, this study will focus on company age. There are two research streams regarding the impact of age; the first stream suggests that older firms are more experienced, having enjoyed the benefits of learning, so are not prone to the liabilities of newness, and can therefore enjoy superior performance. Another stream of research, however, suggests that older firms are prone to inertia, and the bureaucratic ossification that goes along with age; thus, they are unlikely to have the flexibility to make rapid adjustments to changing circumstances, and are likely to lose out in the performance stakes to younger, livelier firms (Majumdar, 1997). Therefore, concerning company age, the theory is in dispute.

Meanwhile, for SMEs, owner-manager characteristics are important in determining firm performance. Theories of managerial perception suggest that organizational success depends on managerial ability to perceive and interpret information from the environment, and this argument is supported by Walters' study (1995). Voerman (2003)[26] identifies the importance of objective managerial characteristics of exporting firms that consist of age, education, experience, and language skills. Considering both company age and owner entrepreneur characteristics, it is hypothesized that:

H-8.6 The higher the firm age, entrepreneur age, education, experience, and language skills, the better the firm performance, which is split into:
H-8.6a. A higher firm age positively affects firm performance.
H-8.6b. A higher entrepreneur age positively affects firm performance.
H-8.6c. A higher entrepreneur education positively affects firm performance.
H-8.6d. A higher entrepreneur experience positively affects firm performance.
H-8.6e. Higher entrepreneur language skills positively affect firm performance.

8.3 Research methodology

Data collection[27]

To test the hypothesized model regarding the impact of cluster factors, international linkage factors, and internal firm factors on firm performance of L&M scale firms, data was collected with questionnaires to a sample (139 units) of L&M scale firms in four furniture clusters in Central Java (see Table 8.2 for the distribution). These clusters, Jepara,

[26] She distinguishes manager characteristics in terms of objective managerial characteristics and subjective or psychosocial managerial characteristics. The first characteristic concerns demographics and capabilities, whereas the second is about their perception towards doing their activities.
[27] In 2002, there were 261 L&M firms in Jepara, 40 in Sukoharjo, 51 in Klaten, and 41 in Semarang City.

Klaten, Sukoharjo, and Semarang City, were chosen because each cluster has more than 30 L&M firms (BPS, 2002). Compared to the other three clusters, Jepara is different in terms of density (both in L&M and in small scale firm density). The agglomeration theory suggests that the proximity of firms plays an important role in firm performance. Besides sectoral density, these three other clusters have different characteristics. The Semarang cluster is located in an urban area, and is relatively new compared to Jepara. In contrast, Klaten and Sukoharjo are rural clusters; Klaten has long historical roots, but Sukoharjo is a relatively new cluster.

As explained above, to test the hypothesized model for small scale firms, we focus on the impact of cluster factors and internal firm factors (especially on firm/entrepreneur characteristics) on firm performance. The data was collected with questionnaires to a sample (100 units) of small scale firms from the Jepara furniture cluster.

Variables and measurements

To test the hypothesized model, indicators for each of the constructs in the model were selected a priori before any data reduction took place. For this research, seven theoretical constructs were obtained from several sources: firm performance, external economies, local cooperation, competition, international linkage, marketing strategy, and firm/entrepreneur characteristics.

Dependent variables

The firm performance indicator employed in the regression analysis in this chapter is sales per worker. Sales per worker is frequently used to measure productivity (Jones and Klinedinst, 2006; Visser, 1997; Commander et al., 1996). However, in the integrated analysis using the structural equation model, the performance variable is a latent variable containing two indicators, sales per worker and return on sales (net income/total sales). Return on sales (ROS) measures management efficiency and effectiveness (Grant et al., 1988; Robins and Wiersema, 1995).

Independent variables

The independent variables examined in this study have stemmed from several sources. Cluster theory suggests that the source of competitive advantages of firms in a cluster is collective efficiency (Schmitz, 1999) consisting of passive efficiency (external economies) and active efficiency (cooperation).

- The external economies variable stems from Marshall (1920), who suggests three benefits for firms: knowledge spillovers, a pooling of specialized skilled workers, and a pooling of inputs and services. Seven indicators are used to measure the external economies latent variable: access to information about buyers, access to information about design, access to information about technology, access to skilled labor, access to wood, access to dry kilns, and access to financial services. In the questionnaire, access is measured on a scale from 1 to 5, based on respondent perceptions.
- The local cooperation variable stems from Schmitz and Nadvi (1994), who suggest forward and backward and horizontal cooperation. The local cooperation latent variable is measured by 10 indicators: cooperation with subcontractors in product developments; in quality improvements; in product delivery; and support given to subcontractors in terms of deposits; cooperation with local buyers in product developments; in quality improvements; in delivery; and support from local buyers in terms of down payments; horizontal cooperation through information exchange; and in joint wood purchasing. These dimensions of cooperation are measured on a scale of 0 for never, 1 for often, and 2 for very often, based on respondent perceptions.
- The competition variable stems from the Porter theory (1998). In this study, the indicator measured is intensity of competition, origin of the strongest competition, and trend of competition. All of the questions ask for respondents' perceptions to these items that are measured on a scale from 1 to 5.
- The global value chain (GVC) theory suggests that the source of competitive advantages of firms is linked to global buyers, due to opportunities for upgrading (Gereffi, 1999). In this study, a link with foreign buyers is measured by cooperation with – and the assistance given – by foreign buyers, and investments made by producers for particular foreign buyers, or made by particular foreign buyers (foreign buyer asset specificity). The international linkage latent variable is measured by eight indicators: cooperation with foreign buyers in product developments, in quality improvements, in delivery, and support given by foreign buyers in terms of deposits. The questions concerned the perceptions of respondents to these items and are measured on a scale of 0 for never, 1 for often, and 2 for very often. In addition, the other indicators are producer asset specificity in a relationship, and switching cost, buyers' asset specificity in a relationship, and switching cost. The questions asked about respondents' perceptions to these items, which were measured on a scale from 1 to 5.

- In contrast, the Contingency Theory suggests the importance of how "internal firm factors" fit with firm performance. Two aspects covered in the present study are marketing strategy, consisting of promotional marketing (Shoham, 1996), and marketing commitment (Evangelista, 1994). The marketing strategy latent variable is measured by nine indicators: visiting domestic exhibitions, participating in domestic exhibitions, visiting international exhibitions, participating in international exhibitions, marketing through websites, brochures/catalogs, showroom, allocating a budget for marketing, and allocating a staff for marketing. The questions asked for respondents' perceptions of these aspects, which are measured on a scale of 0 for never, 1 for often, and 2 for very often.
- Furthermore, characteristic aspects cover firm age, entrepreneur age, education, experience, and English language capabilities. Except for age, all the questions asked about the perceptions of those indicators mentioned above which are measured on a scale from 1 to 4. For small scale firms, characteristic aspects address firm age, entrepreneur age, education, and experience.

Nadvi and Schmitz (1994) inspired some of the survey questions. In order to reduce subjectivity due to a choice of a particular indicator, each question was developed in a particular way so that no single measurement was applied. In other words, we developed different types of answers for the questions in order to improve the reliability of responses given by the respondents (see the questionnaire in the Appendix 8C). However, none of these types of answers had been tested regarding the scale items to determine if they were appropriate measures of their respective underlying factors. The survey instrument was pre-tested on some entrepreneurs for clarity, and questions were matched with the appropriate factors. Modifications were made to the instruments based on the pre-test results. In order to reduce bias, interviews were conducted based on several questions when the enumerators collected the questionnaires to allow for the opportunity to recheck answers to several questions during the interviews.

The data collection was done by interviewing the entrepreneurs or managers of the firms from May 2005 to July 2005.

The population, sample, and respondents

While there are 9,438 wood furniture firms in Central Java as of 2002 (among them 483 are L&M scale firms), about 6,732 firms are in Jepara (among them 261 are L&M scale).[28] Regarding employment size, the L&M firms in the Jepara cluster are relatively small, even though they are larger than the Klaten firms (see Table 8.1).

Table 8.1 The percentage of firm size categories by location among four research areas

Number of workers	Jepara	Klaten	Sukoharjo	Semarang City
M : 20 - 49	68.0	82.0	32.5	36.6
50 - 99	15.3	7.8	32.5	17.1
L : 100 -199	8.9	5.9	22.5	12.2
200 -499	6.8	3.9	10.0	26.8
> = 500	0.9	0.0	2.5	7.3
	100 (n = 261)	100 (n = 50)	100 (n = 42)	100 (n = 34)

Source: BPS (2003).

In the Jepara cluster, lower medium firms[29] are predominant with a share of about 68% of the total number of firms. Although among these four clusters the average size of firms in the Jepara cluster is the smallest, a number of upper large firms are also found. Meanwhile, no upper large firms are found in Klaten, whereas Sukoharjo has a number of firms classified as medium large and upper large. The Klaten and Sukoharjo clusters are adjacent; the firms from both clusters supply each other. Compared to three other clusters, the distribution of firms in Semarang City, an urban area, is relatively more equal. In Semarang City, the average size of the firms is clearly larger than in the other clusters.

Regarding exporting activities, most L&M firms claim to be exporters. The 2003 data from BPS shows that more than half of L&M producers claim to be exporters. Unfortunately, no data is available on the intensity of exporting and the proportion of production to be exported. Concerning foreign ownership, among the 28 foreign-owned firms registered, 15 are located in Jepara, 5 in Semarang City, and 1 in Sukoharjo. This suggests that the Jepara cluster is relatively attractive for foreign firms.

In our 2005 survey, about 150 L&M scale firm owners/managers were interviewed, leading to 139 respondents who completed the questionnaires. Details of the sample distribution can be seen in Table 8.2. From the number of firms in Jepara, 48 were included

[28] The national survey on small scale firms was conducted in 2002.

[29] The medium scale firms can be grouped into two, lower medium with 20-49 workers, and upper medium with 50 to 99 workers. Large scale firms can be divided into lower large firms with 100-199 workers, medium large firms with 200-499 workers, and upper large firms with more than 500 workers.

the sample. Compared to the number and distribution of L&M firms in these four clusters, the sample is considered as a non-proportional sample.

Table 8.2 Distribution of respondents based on areas and types of markets

Variables	Jepara	Klaten	Sukoharjo	Semarang City	Total
Main market					
-domestic	10 (20.8%)	5 (16.7%)	5 (16.1%)	5 (16.7%)	25 (18.0%)
- export	22 (45.8%)	7 (23.3%)	9 (29.0%)	22 (73.3%)	60 (43.2%)
- mixed	16 (33.3%)	18 (60.0%)	17 (54.8%)	3 (10.0%)	54 (38.8%)
Total	48 (100%)	30 (100%)	31 (100%)	30 (100%)	139 (100.0%)

Source: BPS (2003).

Although the focus of the questionnaire was on exporting firms, several domestic market producers were interviewed to gain insights on differences. In order to obtain the information needed, the decision-makers of the firms (whether owners or managers), had to be interviewed. The experience from the pre-study shows that we could not interview respondents directly unless given references by another trusted firm. Therefore, a snowball sampling approach is applied.

This survey is supplemented by another survey conducted among small scale firms from the Jepara district. About 100 small scale firms from the Jepara district were interviewed, consisting of 68 subcontractor firms and 32 non-subcontractor firms.

Data analysis and testing the hypotheses

Descriptive statistics were used to portray the conditions of firms, focusing on each element of Figure 8.1. Regression and stepwise regression analysis was then conducted to examine the impact of each factor on firm performance. The structural equation model of the AMOS program was also employed to simultaneously analyze the impact of those factors on firm performance, specifically for L&M scale firms. Next, probit analysis was done to investigate whether the determinants of firm performance for L&M scale firms have an association with firm and entrepreneur characteristic indicators. The AMOS software was used to analyze the simultaneous relationships of the variables in one model. AMOS is a software program used to analyze structural equation models, in addition to LISREL, MPlus, and so on. Advantages of AMOS are that it is user-friendly with a graphic interface, and that it can read raw data from a variety of different programs (Albright,

2006); like the other methods, it uses a Full Information Maximum Likelihood approach (FIML[30]: Arbuckle, 1996; Knutson et al., 2004).

The structural equation model consists of two parts: (a) a measurement model, which provides a test to link observed variables to a latent variable through a confirmatory factor analysis, and (b) a structural model, which provides a test to link latent variables through a simultaneous equation system. Compared to multivariate statistics, the structural equation model has an advantage as it allows measurement errors in the model. In the exploratory factor analysis it was expected that some variables would be dropped during the confirmatory analysis procedures. This model then tests the hypothesized model statistically to determine the extent to which the proposed model is consistent with the sample data. Structural equation modeling cannot specify an absolute correct model given by the sample data, so *goodness-of-fit* criteria have been established to assess an acceptable fit model. This resulted in an adequate fit of the model with the data.

The plan of the analysis in this chapter is described in the following table.

Table 8.3 The scheme of analysis[31]

L&M scale firms	Small scale firms
8.4 Description of performance determinants (Cluster comparison)	8.7 Description of performance determinants (Comparisons at the firm level-Jepara only)
8.5 Explaining firm performance 8.5.1 Regression analysis 8.5.2 Integrated analysis (AMOS) 8.6 Performance determinants and firm characteristics (probit)	8.8 Explaining firm performance (Regression analysis)
8.9 Conclusion	

8.4 Description of L&M firm performance determinants (cluster comparison)

This section provides a description of the variables discussed in examining L&M firm performance. The majority of respondents in this study were firm owners, 92 respondents corresponding to 66% of the sample, and the rest were managers. Most (80%) were male, suggesting a dominant presence of male entrepreneurs in the furniture industry.

[30] FIML is an iterative model-based process that can deal with missing data under an assumption of multivariate normality to maximize the likelihood of the model, given the observed data in the covariance matrix (Knutson et al., 2004).

[31] The complete survey data as well as straight tables for all variables are available on request.

8.4.1 Localization economies

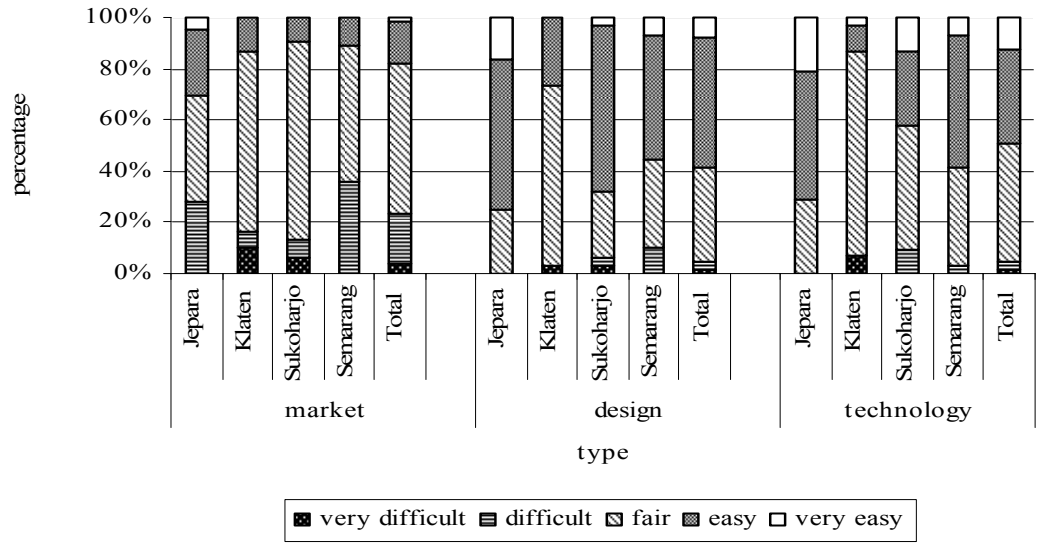
Marshall (1920) underlines three benefits of agglomeration that improve firm performance. These are knowledge spillovers, pooling of labor markets, and pooling of inputs and related services. These advantages result in reductions in unit costs not only from the transactions of inputs and services, but also in output transactions. In a market-oriented era, information concerning buyers and products is important for the success of firms. Before producing marketable products, producers need to collect information and interpret it in order to produce products that are desired by the market. The clustering of firms also attracts buyers to join the cluster, thus reducing marketing costs. Although cost reductions can result from cooperation upstream and downstream, this section will focus on the localization economies which are enjoyed by all firms in a cluster.

Access to markets and product information

The firms participating in our survey indicate that, in general, access to information related to designs and technological processes is higher than access to market information. Although the sources of market information are various, most producers in this study rely heavily on their buyers. Most of the producers are exporters whose consumers are located in foreign countries, so that the information is more difficult to access directly. Compared to other kinds of information, producers are usually less willing to share market information. This is understandable, since to get access to buyer is relatively difficult.

In comparing clusters, producers in Jepara believe they have better access to these three types of information. However, it should be noted that in this section we are dealing with subjective perception. The Jepara cluster is well-known traditionally as a wood furniture production area, and has been visited by countless local traders who sell their products to many parts of Indonesia. Furthermore, foreign buyers have visited Jepara and conducted business with local producers many years before they had visited other clusters, in particular Klaten and Sukoharjo. The number of L&M firms in Jepara is much higher, so more buyers are attracted to it. Since Jepara producers have stronger contact with more buyers, they therefore have better access to market information. This perception may suggest that more marketing effort is needed in other clusters, especially Klaten and Sukoharjo, to attract buyers, including foreign ones. These firms have to be more creative to obtain market information, which means a higher cost for information collection. The perceptions of respondents across the clusters concerning access to information can be seen in Figure 8.2.

Figure 8.2 Access to information on markets, designs and technology from different clusters



Source: Author's survey.

With regard to design, the number of firms in Jepara that fully rely on designs given by buyers are fewer than firms in other clusters. Furthermore, more firms in the other clusters rely on orders in which buyers provide all the specifications. In Jepara, many producers have good technical knowledge, as many of them had been craftsmen or carpenters. Therefore, firms rarely employ special designers, and specialized training to improve technical skills is seldom done. Cooperation in product development is frequently found, in which producers combine foreign designs with local ones.[32] Moreover, producers in Jepara claim that sources of business information are nearby. In Jepara, designs can be accessed easily as some streets overflow with wood furniture shops where many types of products are on display. Many copy shops sell catalogs, and many products are transported in open trucks from one factory to another. Producers claim that they can easily replicate products that are passed by on the street when those products are being transported from the supplier to the contractor's warehouse. However, the trend of firms that rely on foreign buyers has been steadily increasing in the last five years.

Information about designs and technology in Jepara can be accessed from other firms, since there is a high disclosure among firms that frequently visit other producer factories but are also open to visits by other producers. It is common practice to imitate products from other firms or producers nearby, and a successful design will spread through the

[32] About 30% of firms in Jepara rely on designs from buyers, whereas in other clusters about 40% to 50% of firms rely on designs given by buyers.

cluster as it gets copied by many other producers. The information spillover causes the cluster to become a reference for outside agents. Moreover, for producers in Jepara, the risk due to uncertainty regarding the demand for products decreases with the availability of information. In other words, Jepara producers enjoy higher information spillovers than firms in other clusters, especially Klaten and Sukoharjo.

Access to skilled workers, other inputs, and services

The emergence of a specialized labor market, market inputs, and related services provide firms in a cluster with cost saving benefits such as traveling costs, recruitment, training, etc. The cost saving offered by a cluster may be different as it is influenced by the size of the cluster. A spatial concentration of a large number of firms offers higher cost savings compared to a geographical concentration of a small number of firms. Therefore, a large sectoral cluster like the Jepara cluster is expected to offer more benefits to firms inside the cluster. The average score of ease of access to inputs and services is presented in Table 8.4.

Table 8.4 L&M firms' ease of access to inputs and service

	Access to (scale from 1: is very difficult to 5: very easy)							
	Skilled workers		Wood		Dry kilns		Finance	
	mean	std	mean	std	mean	std	mean	std
Jepara	3.90	1.10	2.51	1.26	3.81	1.07	3.93	0.75
Klaten	2.87	0.80	2.57	0.86	2.93	0.61	3.04	0.61
Sukoharjo	3.03	0.56	2.58	0.81	2.77	0.99	3.13	0.55
Semarang City	3.10	0.84	3.03	0.76	3.43	0.73	3.27	1.01

The first indicator of access to inputs and services is access to skilled labor. Compared to the other clusters, Jepara firms have better accessibility to skilled workers. However, it should be noted again that in this section we are dealing with subjective perceptions. In Jepara, the labor market provides the cluster with skilled and specialized workers, which suggests that Jepara producers have cost savings since they do not need to spend more money for recruitment and training. Technical schools and training institutions in Jepara supply the market with skilled workers, but knowledge and skills are also transferred through job training. Just like firms in Jepara, most firms in other clusters rarely improve worker skills through other training. There are several reasons for this. First, sending workers to get training means spending money because the firms must pay for it. Second, it may disrupt the production target. Moreover, they are worried that their workers will move to competitors when their skills have improved. The Jepara producers claim that Jepara people have specific carving skills that cannot easily be replicated by other workers.

However, the increasing competition causes many firms outside of Jepara to employ Jepara workers; and to complicate the issue still further, some Malaysian companies are also currently employing workers from Jepara. Furthermore, in Jepara, the availability of non-permanent workers[33] gives firms flexibility to employ more workers during the peak times and reduce them during the low season.

The second indicator is access to wood. Most firms in all clusters face the problem of access to wood, but Semarang firms experience less problems. Although firms in all clusters face the problem of access to wood, for firms in Jepara the problem is worse, despite the fact that Perhutani prioritizes selling wood to Jepara. There are several reasons for this perception: first, Jepara firms are accustomed to having an adequate supply of wood. Second, the producers have a high dependence on teakwood. Traditionally, producers in Central Java relied on teakwood; however, as the industry expanded and demand for wood increased, many producers began using other kinds of wood such as mahogany, pine, etc. However, many producers in Jepara still rely heavily on teakwood; meanwhile, the teak production of Perhutani has declined. According to some Jepara producers, the specific characteristics of teak make it difficult to be replaced by non-teakwood, and the lack of innovation causes the wood required to produce one unit of a furniture product to remain the same. In other words, many producers in Jepara are unable to adapt to the wood shortage by replacing it with another type of wood, or finding a way to reduce the consumption of teak. In the last few years, the national shortage of wood has caused the prices to increase, whereas the quality has tended to decline, thus exacerbating the problem.

The third indicator is access to dry kilns. Dry kilns are important for maintaining product quality. Due to the decline in the quality of wood, many foreign buyers require producers to process their own products using dry kilns. Compared to the other clusters, the access of Jepara firms to dry kilns is the highest, a bit higher than the accessibility of Semarang firms that mostly have full house production. The advantage of Jepara firms is that there are many dry kilns available in the cluster that can be rented by producers.

The fourth indicator is access to finance. According to the agglomeration theory, firms in a cluster will experience cost savings with the emergence of institutions that offer business services. This research identified several business services that can be found in a

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[33] Temporary workers are supplied by the agricultural sector. The availability of a "job gang" facilitates access to labor. A job gang is a group of workers organized by a group leader, in which workers can be employed temporarily for certain types of work.

cluster such as financial services, worker training services, technological service centers, and business development services. However, complete data is only available for financial services. Compared to firms in other clusters, the firms in Jepara have higher accessibility to financial services, which is not surprising as many formal and informal financial institutions are available in Jepara. Several credit schemes are also offered by the local government to help small firms.

To summarize, the respondents from the 4 different clusters have different perceptions regarding access to information, skilled workers, wood, and financial services. Compared to firms in more rural clusters (Klaten and Sukoharjo), firms in Jepara have better access in most aspects, with the exception of access to wood. However, compared to the firms in Semarang, only in access to information, skilled workers, and financial services are Jepara firms are only a bit better, while the access to wood is less. This means that specialization is perceived by producers in Jepara to provide more benefits in terms of access to information, skilled workers, and services. However, clustering of diverse firms is also perceived by producers in Semarang to provide benefits in terms of firm accessibility to all aspects.

8.4.2 Local network

Having relationships with local firms is identified as an important factor for firms in a cluster, contributing to firm performance (Schmitz, 1995). As many small firms in developing countries have resource constraints, cooperation and support given by their partners helps to overcome their limitations.

Vertical subcontracting linkages

From the 139 firms observed in this study, about 23% produce fully in-house, meaning that they internalize subcontractors. The internalization of the manufacturing process is a way for firms to compete in the global market; firms are able to control the quality and delivery of products and protect their property from being copied by others. However, internalization activities require sufficient availability of resources, an area where many firms from developing countries, especially SMEs, are constrained. Meanwhile, previous studies suggest that firms which cooperate with subcontractors are able to meet the increasing requirement standards of the international market (Nadvi, 1999; Schmitz, 1995).

As expected, more firms in Jepara rely on subcontractors in producing their products (see Table 8.5). It is not surprising that firms in a high-density cluster benefit from the

presence of a large number of subcontractors. For SMEs, it is an easier and faster way to respond to an increase in market demand, but it requires a lot of work to coordinate.

Table 8.5 Comparing cooperation with subcontractors (scale from 0: never to 2: very often)

	Jepara		Klaten		Sukoharjo		Semarang	
	mean	std	mean	std	mean	std	mean	std
Score of cooperation	1.02	0.43	0.65	0.44	0.91	0.41	0.54	0.47
Score of support	0.73	0.31	0.32	0.28	0.50	0.45	0.61	0.38

This research identified several types of cooperation between L&M firms with subcontractors: product development, quality improvements, speed of delivery, and technological knowledge improvements. Compared to the other clusters, firms in Jepara have the highest cooperation with subcontractors. As most suppliers in the Jepara cluster are small firms, cooperation and coordination are important to enable firms to produce the required product. However, the full data is only available for cooperation in product development, quality improvements, and speed of delivery. In a subcontracting relationship, many firms also provide support for their subcontractors to encourage subcontractors to improve the quality of their products or delivery. This research identified several types of support given by L&M firms to their subcontractors, entailing deposits, wood, accessories/supplies, lending machinery, etc. The full data is only available for support in terms of deposits. Providing support in terms of deposits is common in many clusters, but giving support by providing wood is mostly found in Jepara; support given by firms to their subcontractors is also higher in Jepara.

Table 8.6.Distribution of (L&M) firms based on subcontractor status (percentages)

	Types of production		Total	Subcontractor status of L&M firm	
	full in-house production	involve sub-contractors		Never acts as sub-contractor	Sometimes acts as sub-contractor
Jepara	12.5	87.5	100	81.2	18.7
Klaten	23.3	76.7	100	48.0	52.0
Sukoharjo	38.7	61.3	100	32.3	67.7
Semarang	43.3	56.7	100	83.3	16.7

In the wood furniture industry, outsourcing a small part or major parts of the job is common, involving more than half of the firms in all clusters (see Table 8.6). Comparison among shows that more firms in Jepara are involved in outsourcing, whereas in Semarang the percentage of firms doing full in-house production is the highest. With outsourcing, a number of firms perform as contractors, while many others act as subcontractors. A double role is also found, in which a firm acts as a contractor for a certain firm but also

subcontracts its product to other firms. Fewer L&M firms in the Jepara and Semarang cluster perform as subcontractors, whereas in the Klaten and Sukoharjo clusters the number is larger, comprising more than half of the firms. This finding supports Ernst and Kim's (2002) argument that underlines the role of local L&M firms in the global production network as high-order subcontractors of other firms; this result is also consistent with findings in Chapter 7, in which L&M scale firms benefit from other L&M scale firms.

Linkages with local buyers

Forward ties with local buyers

Studies by Knorringa (1999) and Tewari (1999) show that domestic intermediaries play critical roles in the development of a cluster, in which local buyers act as a source of upgrading so that local producers can enter the high segment market. In this study, the role of local buyers is not prominent, especially compared to the role of foreign buyers. Compared to other clusters, firms in Jepara have a higher number of domestic buyers. As the reference cluster, many industrial firms and intermediaries, local traders, wholesalers, and retailers put Jepara as their first destination when they search for suppliers.

This research identified several types of cooperation found between L&M firms with local buyers, which entail cooperation in product development, quality improvements, speed of delivery, and technological knowledge improvements. However, full data is available only for cooperation in product development, quality improvements, and speed of delivery. Although 70% of the respondents have domestic buyers, only 35% of the firms cooperate with the domestic buyers. Compared to cooperation with foreign buyers, the intensity of cooperation with local buyers is lower, which is understandable, as the majority of respondents are exporters. They focus on foreign buyers, as they fear that their foreign buyers will leave them, or they expect their foreign buyers will increase their orders. However, qualitative interviews indicated that some domestic buyers also have significant orders and give better profit margins. Nevertheless, a tendency may exist for producers to underestimate local buyers and place too many expectations on foreign buyers.

Regarding the support given by local buyers, this research identified several types of support given, pertaining to deposits, wood, accessories/supplies, borrowing machinery, etc. Again, full data is available only for support in term of deposits. Although cooperation with local buyers is relatively low, as expected, cooperation with and support given by local buyers in the Jepara cluster is higher than the other clusters. In addition, support

given by local buyers covers deposits, raw materials, and supplies. Deposits are common for firms in all clusters but support, in terms of materials or supplies, is found in the Jepara cluster.

Horizontal cooperation and joint action

The cluster theory emphasizes the importance of horizontal cooperation for firm performance improvements; however, examples of strong clusters are rarely complementary with strong horizontal cooperation. In his study, Schmitz (1999) shows an example of a shoe cluster in Brazil with relatively strong vertical cooperation but relatively weak horizontal cooperation. Moreover, Bair and Gereffi (2001) argue that horizontal cooperation is not found in a successful blue jean cluster in Mexico, in which vertical cooperation is strong. This research identified cooperation with other firms of various types such as exchange of information, joint material purchasing, joint orders, borrowing/lending of machinery, and joint marketing. However, full data is only available for cooperation in exchange of information (72% of producers involved) and joint material purchasing (56% of producers involved).

Not surprisingly, more firms are involved with cooperation in information exchange since this cooperation implies fewer resource commitments. Producers that are not involved in any horizontal cooperation argue that they do not want competitors to know their strategies, as they are afraid that competitors will use the information to undermine their strategies and even to steal their buyers. Qualitative interviews show that firms that are already strong have a low willingness to cooperate with other firms. Compared to other clusters, producers in Jepara have the highest involvement in horizontal cooperation.

In addition, multilateral joint action, such as the role of associations, is also important in the industrial district model. In this study, producer involvement in formal associations is relatively high[34] (at about 84%), compared to producer involvement in informal associations (see Table 8.7). However, qualitative research indicates that the membership of many producers in formal associations is mostly passive in order to obtain a membership card.[35] In comparing Jepara with other clusters, a large number of Jepara manufacturers are not involved in formal associations, but are intensively involved in self-help groups. Self-help groups have been important in the development of the Jepara

[34] Several formal associations are found in Central Java such as ASMINDO, APPINDO, etc.

[35] Experience shows that a membership card is needed in dealing with some business transactions. For instance, several years ago to get an export license a recommendation from a wood furniture association was required.

cluster. Before formal associations were established, producers were already accustomed to activities initiated by self-help groups. Therefore, when formal associations are established and offer similar programs as self-help groups, many producers in Jepara show no interest in joining. Many producers say that formal associations are not beneficial; some go further to criticize the associations for only giving benefits to board members.

Table 8.7 Association membership of L&M firms

	formal associations	informal associations
Jepara[1]	47.9	64.6
Klaten	86.7	n.a.
Sukoharjo	87.1	22.6
Semarang	100.0	6.7

Notes: 1. Of small scale firms in Jepara, only 10% is involved in formal associations, while 67% is involved in informal associations.

In sum, in the wood furniture industry, outsourcing parts of jobs to subcontractors is fairly common, whereas cooperation with subcontractors is rather limited. However, cooperation with subcontractors is relatively high compared to cooperation with local buyers and other wood furniture firms. Compared to the other clusters, more firms in Jepara cooperate with local partners such as subcontractors, local buyers, and competitors.

8.4.3 Competition

In the industrial district model, competition and cooperation co-exist and play important roles for cluster development. Porter (1998) argues that competition is important in a cluster as it induces innovation and leads to an increase in competitive advantages. However, most studies from developing countries perceive competition as fierce (Schmitz, 1999). Competition causes some firms in the cluster to develop but others to decline. The degree of competition can be seen from the entry of new firms, while some others must exit from the market. Meanwhile, the wood furniture industry is considered as a highly competitive industry, as entry barriers for new firms are very low. With relatively low technology and heavy reliance on labor, many individuals from the region can establish new firms, thus intensifying competition in the market. The increasing participation of firms from developing countries in supplying wood furniture has further increased competition.

This study shows that firms from different clusters have diverse opinions on the intensity of competition they face, but most producers agree that competition is high and presently has increased. The findings from Jepara support Schmitz's finding from the Sinos

Valley cluster, in which producers perceive competition as fierce. Compared to the other clusters, more producers in Jepara perceive competition as very high, and they indicate that the strongest competitors are from the district. This finding is contradictory with the interviews done with key informants, and studies done by ILO that express fear of declining competitiveness of Jepara products (Posthuma, 2003). This may happen for several reasons. First, these producers do not have experience in dealing with the decline of orders from foreign buyers. Second, if their orders decline they perceive this decline as temporary due to political instability and believe that the industry will recover and return to its previous position. Third, producers have limited knowledge about competition. Since most firms misidentify the competitors, as a result there is no feeling of urgency to work together to overcome competitive threats from foreign countries. In the meantime, producers from other clusters indicate that firms from foreign countries are the strongest competitors, but they rated the competition as fair and higher.

To conclude, competition in the wood furniture industry is perceived differently by producers from different clusters, but they agree that competition has tended to increase. Although many producers are aware of competition from foreign countries, they perceive it as not extremely high, so that no joint efforts are undertaken to overcome this problem.

8.4.4 International network

Previous studies show foreign buyers have important roles in the growth of a cluster in developing countries (Bair and Gereffi, 2001; Nadvi, 1996). The experience of a blue jean cluster in Torreon, Mexico, and a surgical instrument cluster in Sialkot, Pakistan, show that by linking to international buyers, upgrading – at the firm level and industrial level – takes place in order to improve their access to the international market. The important role of foreign buyers is found in the wood furniture industry in Central Java, particularly in Jepara. Since the Indonesian economy opened to the international market in the 1970s, foreign buyers have entered the wood furniture industry, especially in Jakarta and Bali. However, only since the mid-1980s foreign buyers have entered Jepara as traders or investors. During the early development of the Jepara cluster, several foreign buyers were deeply involved, not only in cooperation but also in supporting the operational firms, by providing advanced financing and management for the firms. One entrepreneur claims her foreign buyer helped her to pay for the land she bought, so that she could expand her factory. Another entrepreneur professes that his foreign buyer equipped his office with a

computer and fax machine, so that he can communicate easily with his buyer. It means that presently foreign buyers seldom give support, except in the form of deposits.

Table 8.8 Foreign buyer cooperation (scale from 0: never to 2: very often)

	Jepara		Klaten		Sukoharjo		Semarang	
	mean	std	mean	std	mean	std	mean	std
Score of cooperation	1.07	0.51	0.85	0.44	0.73	0.31	0.94	0.43
Score of support	0.36	0.22	0.35	0.26	0.33	0.19	0.30	0.21

This research identified several types of cooperation found between L&M firms with foreign buyers, which pertain to cooperation in product development, quality improvements, speed of delivery, and technological improvements. However, full data is available only for cooperation in product development, quality improvements, and speed of delivery. In this study, cooperation with foreign buyers is high in all clusters, in which about 90% of firms cooperate with their foreign buyers in one or several aspects. For many firms, cooperation is a way for producers to maintain relationships with their foreign buyers. However, firms in Jepara have a slightly higher percentage of cooperation. This is not surprising, since foreign buyers have historically been involved in the development of Jepara when the cluster started to grow. In this type of cooperation, cooperation in product development is high in Jepara (60% of producers). As many Jepara producers have a high aptitude in design that is rarely found in other clusters, many foreign buyers like to combine their designs with the local ones. In addition, cooperation in quality improvements is relatively high in almost all clusters, involving more than 50% of the firms. Regarding support given by foreign buyers, this research identified several types of support given, pertaining to deposits, wood, accessories/supplies, office facilities, and other financial assistance. However, full data is available only for support in terms of deposits. In comparing among the clusters, we observe no differences across clusters.

We can conclude that relationships with foreign buyers are high in most firms across locations. Some differences in the relationships are found in the scope and intensity of cooperation, in which Jepara has the highest scores. Much of the strong cooperation is due to historical reasons.

8.4.5 Marketing strategies

The contingency theory suggests that using an appropriate marketing strategy is critical in order to increase firm performance (Zou and Stan, 1998). The marketing strategies can be assessed from promotional marketing and marketing commitments. Promotional marketing is an important element of any effective marketing strategy, as it is designed to stimulate a customer to take action to buy. Furthermore, marketing strategies need to be supported by allocating staff to do the job and regularly allocate a budget, so that all activities can take place. This study shows that most producers are aware of the importance of marketing strategies, in which most producers apply one or several types of promotional activities. In the meantime, most producers have high marketing commitments by allocating staff and a budget for marketing. Firm involvement in marketing strategies can be seen in the table below.

Table 8.9 Marketing strategies applied by firms

Variables of marketing	(%) Firms involved	Comparing the Jepara cluster with control groups
1. Promotional activities		
(1) visiting domestic exhibitions	83.5	Almost equal across clusters.
(2) participating in domestic exhibitions	60.0	Jepara is the highest, whereas Semarang is the lowest (about 40%).
(3) visiting foreign exhibitions	34.4	Almost equal between Jepara and Semarang, whereas Klaten firms' involvement is lowest (about 10%).
(4) participating in foreign exhibitions	20.0	Jepara firms' involvement is relatively high (25%), but less than Semarang firms (37.9%).
(5) websites	43.3	Jepara is the highest (68.2%), higher than Semarang firms (44.8%).
(6) brochures and catalogs	62.9	Jepara is the highest (83.7%), almost equal across other clusters.
(7) showrooms	62.7	Jepara is the highest (77.8%), almost equal across other clusters.
2. Marketing commitment		
(1) allocating staff for marketing	60.8	Almost equal across clusters.
(2) allocating a budget for marketing	63.6	Almost equal across clusters.

Firms are involved in various marketing activities. The less costly the activity, the more firms are involved in the marketing, such as visiting domestic exhibitions and distributing brochures or catalogs. Compared to other clusters, the marketing activities done by Jepara firms are higher, which contradicts the previous statement in which firms in a high-density cluster exert marketing effort. The possible reasons are first, it reflects the reaction of producers to the decline in orders experienced by Jepara firms, especially orders from foreign buyers. Second, some marketing activities done by firms from Jepara have a historical background, such as utilizing showrooms and participating in domestic exhibitions.

To summarize, producer involvement in promotional activities and marketing commitment is relatively high. Regardless of the quality of involvements compared to other clusters, Jepara firms have higher involvement in some aspects of marketing. In most aspects there are no differences in promotional activities and marketing commitment between firms across clusters.

8.4.6 Firm and entrepreneur characteristics

The contingency literature suggests that firm age and entrepreneur characteristics determine firm performance. While the discussion about age suggests two different possible effects of age (Majumdar, 1997), the discussion on entrepreneur characteristics addresses the ability of entrepreneurs to perceive and interpret information from the environment (Walter, 1995). Table 8.10 below describes the characteristics of respondents from the Jepara cluster and other clusters.

Table 8.10 The characteristics of respondents

Indicator	Cluster							
	Jepara		Klaten		Sukoharjo		Semarang	
	mean	std	mean	std	mean	Std	mean	std
Firm age (years)	11.58	7.87	8.90	4.40	10.06	4.31	10.50	7.99
Entrepreneur age (years)	42.05	9.90	41.67	6.70	43.00	6.13	41.00	7.71
Entrepreneur education (scales from 1 to 4)	3.12	0.77	3.29	0.56	3.12	0.65	3.84	0.50
Entrepreneur experience (scales from 1 to 4)	3.07	1.42	2.10	1.18	2.73	1.08	2.63	1.12
Entrepreneur English skills (scales from 1 to 4)	2.14	1.03	2.86	0.73	2.31	1.01	3.05	0.97

Firm age in the Jepara cluster is high but the dispersion is also high as shown by the high standard deviation; the same holds true for firms in the Semarang cluster. Regarding managers' age, hardly any differences are found across the clusters. It is not surprising that producers in Semarang, an urban area, have relatively better education and English skills. Meanwhile, producers in Jepara have more experience than producers in other clusters.

To summarize, except for entrepreneur work experience, the characteristics of producers from the Jepara cluster are not very different from other clusters. Producers from the Semarang area have better education and English skills.

8.4.7 Firm performance

As explained in Section 8.3, the indicators used to measure performance in this chapter are sales per worker for the regression analysis, and sales per worker (SAW) and return on sales (ROS) for the structural equation model. More information is given in Table 8.11 about SAW and ROS and the number of employees is also presented.

Table 8.11 The performance of L&M firms

		Jepara	Klaten	Sukoharjo	Semarang
Number of workers per firm	mean	62.0	46.0	76.0	109.0
	std	53.0	29.0	42.0	63.0
Sales per worker	mean	54.6	50.5	46.8	73.5
	std	26.9	36.3	30.2	48.3
Return on sales (%)	mean	12.4	13.9	12.7	11.8
	std	3.9	4.1	4.0	3.7

Using the performance indicator of sales per workers (SAW), the Jepara cluster has slightly higher productivity over firms in Klaten and Sukoharjo but less than Semarang. Compared to other clusters, the productivity of firms in Semarang is the highest. An explaination of the variation in firm performance is presented in the next section.

8.5 Explaining firm performance by externalities and internal firm factors

8.5.1 A regression analysis

To understand the impact of cluster factors, international linkages, and internal firms' factors, regression methods are applied. The dependent variable is ln (natural logarithm) of sales per worker. We start with a simple approach where we run a regression for each group of factors separately and continue with a stepwise regression method, in which the insignificant variables are simultaneously dropped from the equation. The results are presented in Table 8.12. The third column is the output from all variables considered in each factor, whereas the fourth column is the output from the stepwise regression.

Table 8.12 Regression results for L&M firms (dependent variable is ln sales per worker)

		Regression	Stepwise regression
I.1	**External Economies**		
	Constant	2.82	2.68
	Access to:		
	Buyer information	–0.02	
	Design information	–0.05	
	Technological information	0.01	
	Wood	0.10***	0.09 ***
	Skilled workers	0.18***	0.16 ***
	Dry kilns	0.14***	0.14 ***
	Finance	0.04	
	Dummy for Klaten	–0.12*	–0.08*
	Dummy for Sukoharjo	–0.10*	–0.09*
	Dummy for Semarang	–0.01	0.001
	R2	0.73	0.72
	F-test	29.21	56.56
I.2	**Local Cooperation**		
	Constant:	3.25	3.29
	Cooperation with local buyers in:		
	Product developments	0.00	
	Quality improvements	0.13***	0.28***
	Delivery	–0.06	
	Deposits	0.27***	0.10***
	Cooperation with subcontractors in:		
	Product developments	0.03	
	Quality improvements	0.10***	0.10***
	Delivery	0.03	
	Deposits	0.25***	0.26***
	Horizontal cooperation:		
	Information exchange	–0.02	
	Material purchasing	0.06	
	Dummy for Klaten	–0.10*	–0.12*
	Dummy for Sukoharjo	–0.11*	–0.14*
	Dummy for Semarang	0.08	0.07
	R2	0.84	0.83
	F-test	44.99	105.75
I.3	**Competition**		
	Constant:	3.04	3.16
	Competition intensity	0.11**	0.13**
	Origin of the strongest competitors	0.04	
	Trend of competition	0.05	
	Dummy for Klaten	0.28**	0.21**
	Dummy for Sukoharjo	0.36**	0.29**
	Dummy for Semarang	0.38***	0.32***
	R2	0.19	0.19
	F-test	6.42	7.68

Table 8.12 Continued

II	**International Linkage**		
	Constant:	2.90	2.80
	Cooperation with foreign buyers in:		
	Product developments	0.19***	0.33***
	Quality improvements	0.13***	0.18***
	Delivery	0.04	
	Deposits	0.02	
	Producer investments in a relationship	0.16***	0.20***
	Producer switching costs	0.01	
	Buyer investments in a relationship	0.26***	0.31***
	Buyer switching costs	0.11	
	Dummy for Klaten	–0.14**	–0.12**
	Dummy for Sukoharjo	–0.17***	–0.14***
	Dummy for Semarang	0.02	0.13**
	R2	0.74	0.72
	F-test	25.01	16.48
III.1	**Marketing Strategies**		
	Constant:	2.80	2.82
	Visit domestic exhibitions	0.06***	0.08***
	Participate in domestic exhibitions	0.08***	0.09***
	Visit international exhibitions	0.01	
	Participate in international exhibitions	–0.04	
	Websites	0.21***	0.12***
	Brochures/catalogs	0.03	
	Showrooms	0.05	
	Marketing budget	0.30***	0.28***
	Marketing staff	0.25***	0.25***
	Dummy for Klaten	–0.23**	–0.22**
	Dummy for Sukoharjo	–0.27***	–0.26***
	Dummy for Semarang	–0.24***	–0.20***
	R2	0.79	0.79
	F-test	40.50	61.29
III.2	**Firm and Entrepreneur Characteristics**		
	Constant:	2.85	3.11
	Firm age	0.00	
	Entrepreneur age	0.01	
	Entrepreneur education	0.22***	0.23***
	Entrepreneur experience	0.09*	0.14**
	Entrepreneur English skills	0.31***	0.32***
	Dummy for Klaten	–0.24***	–0.26***
	Dummy for Sukoharjo	–0.31***	–0.33***
	Dummy for Semarang	–0.03	–0.02
	R2	0.79	0.79
	F-test	61.40	82.13

Note: We use stars to indicate significance levels. *** *refers to significance at 1%,* ** *at 5%, and* * *at 10%.*

From Table 8.12, several important findings can be derived. First, regarding external economies, among these indicators access to skilled workers, access to raw materials, and access to dry kilns are identified as having positive and significant effects on sales per worker. Knowledge spillovers that are always stressed by previous studies as an important contributor to the competitive advantage of a cluster are statistically insignificant. In this study, access to financial services also does not affect firm performance.

Second, among several proposed indicators for a local network, only four indicators (cooperation with local buyers in quality improvements, support given by local buyers, cooperation with subcontractors in quality improvements, and support given to subcontractors) have positive and significant effects on performance. In the literature, scholars emphasize the important role of horizontal cooperation to increase firm performance. Interestingly, in this study horizontal cooperation has no effect on performance.

Third, regarding competition, three competition indicators that are proposed can explain the firms' performance but only one, competition intensity, actually has an effect on firm performance in this study.

Fourth, regarding international linkages, in this study, among these eight indicators proposed, only four indicators (cooperation with foreign buyers in product development, cooperation with foreign buyers in quality improvement, asset specificity in terms of investments made by producers in a relationship with a particular foreign buyer, and buyer investments in a relationship with a producer) are important in determining firm performance. In addition, support given by buyers appears to diverge from what the qualitative findings suggest, which is in line with the idea that support given to buyers only happens in the introductory stage of firm development (Schmitz and Knorringa, 2000). Moreover, we find that when foreign buyers invest in the relationship with their producers this positively affects firm performance.

Fifth, regarding marketing strategies, among nine indicators of marketing strategy, five indicators play an important role in determining firm performance in this study; these are visiting domestic exhibitions, participating in domestic exhibitions, marketing through websites, regularly allocating a budget for marketing, and allocating staff for handling marketing.

Sixth, regarding firm and Entrepreneur characteristics, in this study, five indicators of firm and entrepreneur characteristics are proposed to determine firm performance. Among these indicators, only education, experience, and English skills help to determine firm performance.

The dummy variables for clusters are counted to control for cluster difference in far as they are not represented by other variables.

From the results above, the findings support most of the hypotheses, which are summarized in the table below.

Table 8.13: Results of hypotheses tests for L&M firms based on a regression analysis

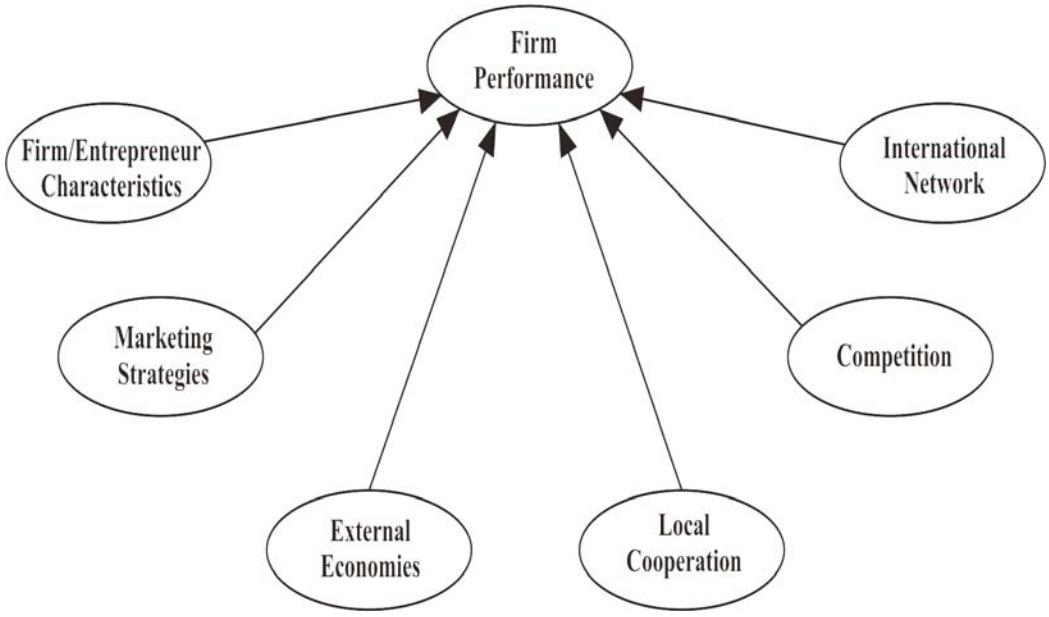
	Hypotheses	Results
H-8.1	*External economies*	
H-8.1a.	Access to market information positively affects firm performance.	rejected
H-8.1b.	Access to inputs and services positively affects firm performance.	accepted
H-8.2	*Local cooperation*	
H-8.2a.	Cooperation with local buyers positively affects firm performance.	accepted
H-8.2b.	Cooperation with subcontractors positively affects firm performance.	accepted
H-8.2c.	Horizontal cooperation positively affects firm performance.	rejected
H-8.3	Competition positively affects firm performance.	accepted
H-8.4	*Cooperation with foreign buyers*	
H-8.4a.	Cooperation with foreign buyers positively affects firm performance.	accepted
H-8.4b.	Asset specificity of foreign buyers positively affects firm performance.	accepted
H-8.5	*Marketing strategies*	
H-8.5a.	Marketing promotions positively affect firm performance.	accepted
H-8.5b.	Marketing commitments positively affect firm performance.	accepted
H-8.6.	*Firm and* Entrepreneur *characteristics*	
H-8.6a.	Firm age positively affects firm performance.	rejected
H-8.6b.	Entrepreneur age positively affects firm performance.	rejected
H-8.6c.	Entrepreneur education positively affects firm performance.	accepted
H-8.6d.	Entrepreneur experience positively affects firm performance.	rejected
H-8.6e.	Entrepreneur English language skills positively affect firm performance.	accepted

To conclude, access to inputs and services, cooperation with local buyers, cooperation with subcontractors, competition, cooperation with foreign buyers, asset specificity in relationships with foreign buyers, marketing promotions, marketing commitment, a number of entrepreneurial characteristics, each has a positive impact on the performance of L&M firms. However, according to the regression analysis, knowledge spillovers, horizontal cooperation, firm age, entrepreneur age, and entrepreneurial experience have no statistically significant impact on firm performance.

8.5.2 Integrated model of firm performance

In the previous section, the regression analysis investigated the relationship between each group of variables in the model to firm performance separately. In order to analyze the simultaneous relationships between cluster factors, international network factors, and firm internal factors on firm performance, the Structural Equation Model is applied (see Figure 8.3 below and Appendix 8.3 for the detailed model). In this model, firm performance is measured by sales per person and return on sales. Sales per person represent firm productivity, whereas return on sales represents firm efficiency/profitability.

Figure 8.3 Initial model for L&M scale firm performance



The structural model was analyzed based on the modified measurement model (confirmatory factor analysis) using the maximum likelihood estimation method. The AMOS model test shows that not all proposed indicators are linked to the latent constructs (see Appendix 8.2 for the summary of the measurement test). The initial model as shown in Figure 8.3 was tested resulting in insignificant coefficients that suggest a lack of support for this specification of the model.

The revised model fits the data adequately,[36] as indicated by an insignificant chi-square value of Keat and Hitt (1988), who note that an overall chi-square goodness of fit test with a p-value exceeding 0.10 indicates that the model was well-specified. In comparing the initial model with the revised model, the revised model shows the better fit (see Table 8.13). The data thus supports the hypotheses, namely that, external economies, the

[36] Acting on the assumption that the original model is specified incorrectly, the model is subsequently modified, resulting in a final model exhibiting good fit. Based on the L&M scale firms' data, the indices indicate an adequate fit for the structural portion of the model. From the test measurement model above, not all performance indicators are linked to the latent construct. Three fit indices, as recommended by Arbuckle and Wothke (1999) were usually chosen to determine if the data fit the model. The three indices include the comparative fit index (CFI; Bentler, 1990); the Tucker-Lewis coefficient (TLI; Bentler and Bonnet, 1980), which is also known as the Bentler and Bonnet non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA; Browne and Cudeck, 1983). Arbuckle and Wothke suggest that a value of 0.90 or greater for both CFI and TLI indicates a reasonable fit of the data with a model and an RMSEA value of about 0.08 or lower, but certainly no greater than 0.10 indices is an acceptable error rate for a model. Accordingly, a model that meets all three criteria is considered to have an acceptable fit.

international network, marketing strategies, and entrepreneur characteristics significantly influence firm performance. But local cooperation and competition are not significant. Figure 8.4 below is a modified structural equation model that confirms it fits the sample data.

Table 8.14 Firm performance model comparison

Model	X^2	df	Prob	RMSEA	GFI	AGFI	TLI	CFI
Initial	689.200	178	0.00	0.1803	0.577	0.418	0.626	0.651
Revised	127.097	104	1.02	0.0590	0.883	0.931	0.955	0.966

The estimation results are described in the table below.

Table 8.15 The estimation of standardized effects of latent variables on firm performance

Latent variables	Estimate
External economies	0.324**
International linkage	0.331**
Marketing strategy	0.425**
Entrepreneur characteristics	0.162*
Local cooperation	0.013
Competition	0.037

*Note: stars indicate statistical significance: ** $p < 0.05$; * $p < 0.10$*

These results mean that marketing strategy, external economies, and international linkage, have direct effects on firm performance with a significance of 0.05, whereas entrepreneur/ entrepreneur characteristics have an effect on firm performance under a 0.10 level of significance. However, the effect of local cooperation and competition are not statistically significant. Among these independent variables, marketing strategy has the strongest effect (an increase of marketing strategy with 1 standard deviation, increases firm performance with 0.425 of a standard deviation). International linkage and external economies have almost the same effects. Strong correlations are found between marketing strategy and external economies (r = 0.787); between entrepreneur characteristics and international linkage (r = 0.701); entrepreneur characteristics and external economies (r = 0.600); and between international linkage and external economies (r = 0.574). The R^2 of firm performance is 0.775, which means that the predictors of firm performance explain 77.5% of its variance. The new global model is presented in Figure 8.4, while the detailed model version is described in Figure 8.5.

Figure 8.4 Final model for L&M scale firm performance

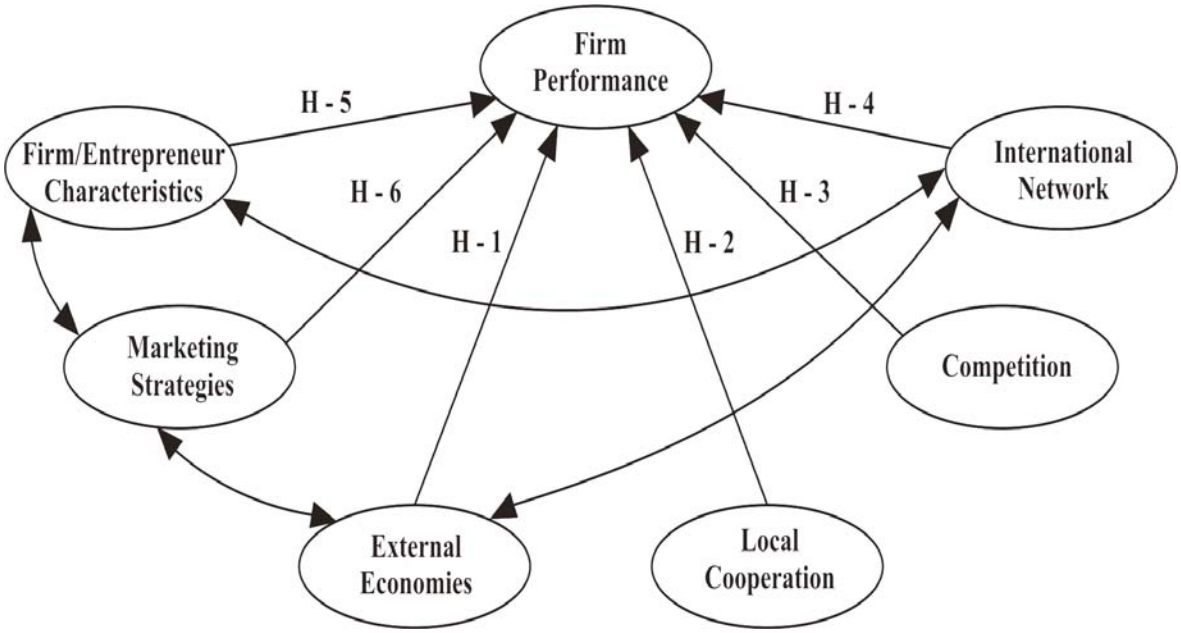
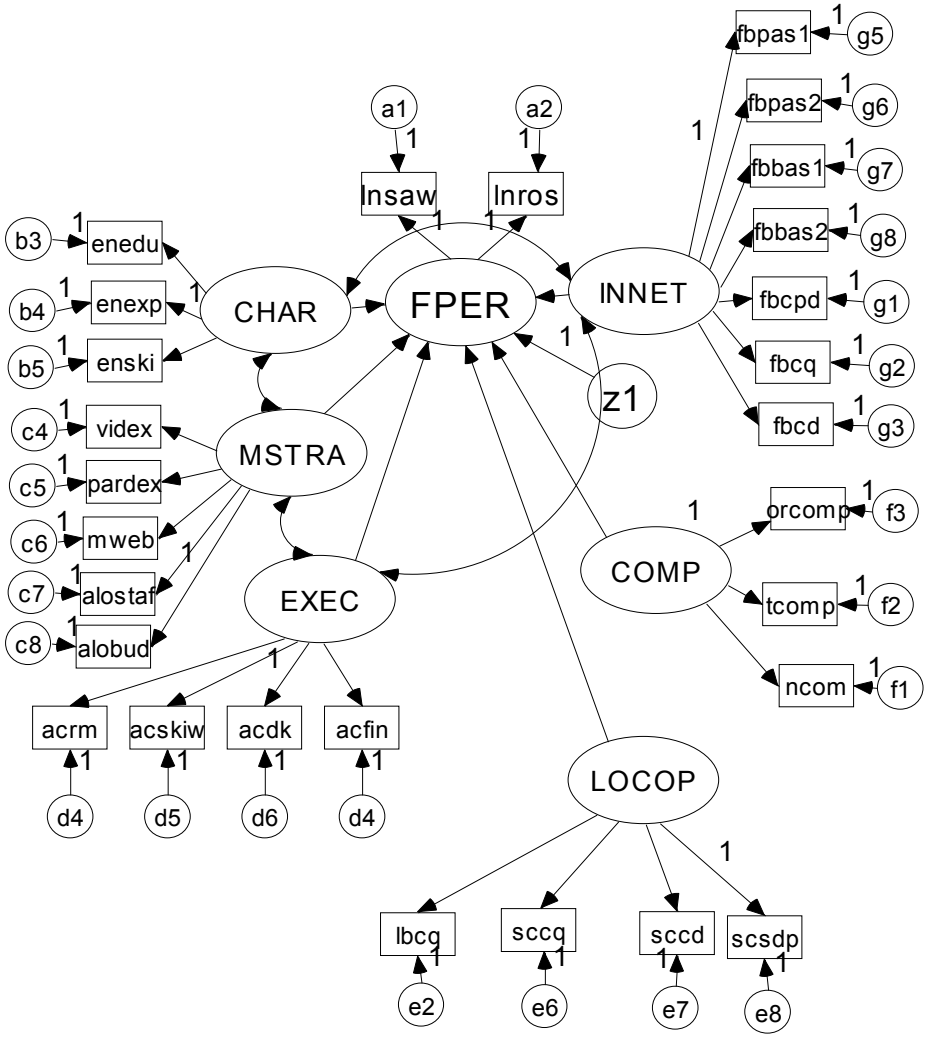

Firm
Performance
H - 5
H - 4
Firm/Entrepreneur
Characteristics
International
Network
H - 6
H - 3
H - 1
H - 2
Marketing
Strategies
Competition
External
Economies
Local
Cooperation

Figure 8.5 Revised model for L&M scale firm performance



Using the structural equation model, the tested theoretical model clearly establishes the role of external economies, international linkages, marketing strategies, and entrepreneurial characteristics on the construct of firm performance. Therefore, the model reveals support for hypotheses H-8.1, H-8.4, H-8.5, and H-8.6.

8.6 In-depth analysis of the determinants of firm performance

The AMOS analysis in the previous section showed that firm performance is influenced by external economies, the international network, marketing strategies, and entrepreneur characteristics. Although the results provide information on the type of relationship, significance, and magnitude effects from the latent variables, the model does not explain why indicators are different for different respondents. To explore this in greater detail, a probit analysis is conducted, the results of which can be seen in Appendix 8.5.

From the characteristics investigated, the English skills factor appears to be dominant in explaining most indicators determining firm performance followed by education. In contrast, entrepreneur age is not important as it is associated only with indicators of competition and does not address the latent variable of firm performance. Whether firms are exporting also explains many of these determinants, which is understandable, as exporting activities require English skills. The advantage of English skills and education is illustrated in the two cases below.

Box 8.1 The case of entrepreneurs with different characteristics

CASE 1.
The first case involves a female exporter in Jepara, who employed about 20 workers in the early stage of her business in 1996, and who has developed her business into a good exporting firm that now employs 235 workers. She started her wood furniture firm as soon as she graduated from college inspired by the success of her father-in-law. In the beginning, she sold her products in the local market, but began to export when a French buyer placed orders after visiting her workshop. The export market grew rapidly, so she decided to forego the local market altogether and dedicate her business to exporting; she now has five permanent foreign buyers, including the French buyer who was her first foreign customer. She does little marketing to attract these buyers as most visit her factory when they are in Jepara. Her knowledge of English helps her to communicate with foreign buyers, enabling her to maintain a long-term business relationship with them. After the first negotiation, all transactions are done by phone, fax, and email, and her buyers usually visit her factory one or two times a year to check that everything is still on track.

Through communicating with her buyers, she collects market information to improve her designs, quality, or delivery time. She has also visited her French buyer's company in France to learn the market needs and wants. Some of her production is based on designs provided by buyers, but she frequently provides her own designs and receives input from her buyers. She acquires wood easily as she relies more on mahogany and other types of wood, uses teakwood only for some small items. She also has no problems hiring good skilled workers.

Table 8.1 Continued

At first, she had no machinery but rather than initially buy equipment she borrowed from her father-in-law. As buyer orders increased, she decided to buy machinery and let her suppliers use it when it was unused or under capacity. She produces specific products in-house and subcontracts others. Improvements in quality and delivery are important, so she cooperates with her suppliers. She regularly sends her quality control staff to subcontractors, but she also frequently invites her subcontractors to discuss their problems and how she can help them overcome difficulties. She has good personal relationships with all buyers, especially with her French buyer. In 1998, her French buyer suggested that she expand the factory and lent her money to buy land nearby. Her French buyer also suggested that she buy machinery in order to improve the quality and speed of production. She visited international exhibitions to get ideas about designs and price information, and presently she has a website to create images for her company. In effect, her education and English skills have helped her develop her business.

CASE 2.
The second case is a male producer in Jepara, who employed about 30 workers in the early stage of her business in 1990. He developed his business, and by 1998 had nearly 150 workers, but now employs 68 workers. He began his business after working 10 years as a truck driver for two furniture firms in Jepara. When he worked for other companies his job was to transport furniture from Jepara to Jakarta and several other towns. He was therefore well-acquainted with the buyers. He began by supplying to exporters in Jakarta and also produces for the domestic market. He is a high school graduate and does not speak English. In 1998, some foreign buyers visited his workshop accompanied by a translator to place orders. Therefore, he did not have to do much marketing effort to get these buyers. Although he exports regularly every year, his exports have not grown much as his foreign buyers have changed frequently. He greatly relies on his translator to understand buyers' needs and respond to them. Most of his production is based on designs given by buyers and most orders are distributed to his subcontractors. The company receives the unfinished products from his subcontractors and does the finishing work. His product is garden furniture, so he relies greatly on teakwood but he feels that the availability of teakwood is getting more difficult in the last few years. He can easily acquire skilled workers or machinery. He has his own dry kiln, built several years ago, because the quality of wood in the market has declined. He does not have his own sawmill, but this is not problematical as he can use the machine owned by the self-help group, of which he is a member. He cooperates with his suppliers to improve the product quality and speed of delivery. As his product is more standardized, he does not need extra time to discuss product specifications, as most of his suppliers already know them. He sends his quality control staff to his suppliers. Although he claims not to have any problems in dealing with his buyers, it seems that his performance is constrained by his lack of English skills and low level of education.

The two case studies above illustrate how high level of education and English skills have played a crucial role in the overall performance of firms.

8.7 Description of performance determinants of small scale firms (in comparison with L&M firms)

The previous sections discussed how external factors and internal firm factors determine firm performance of L&M size firms. Some unexpected findings raise the question whether these findings also apply to small scale firms. This section examines how external factors and internal firm factors determine firm performance of small firms. Since most small firms do not have foreign buyers or marketing strategies, we focus on cluster factors and firm/ entrepreneur characteristics.

All respondents (n = 100) in this study among small firms are firm owners or entrepreneurs. The majority of the small scale firm respondents are males, with only two females. This depicts a clear dominant presence of males in the industry. The lack of females in small scale firms may be associated to the nature of the tasks that firm managers have to deal with; they are responsible for strategic as well as technical aspects, such as production processes. To get a further description about the performance of Jepara small firms, we compared them with the performance of the Jepara L&M firms. As mentioned in Section 8.3, 48 L&M Jepara firms were interviewed.

8.7.1 Localization economies

Access to markets and product information

As mentioned earlier, cost savings for marketing are a potential advantage for firms in a cluster since the cluster attracts buyers. The development of the Jepara cluster has also improved the market access of small firms. Buyers are various, from industrial firms, traders–wholesalers or retailers, exporter agents, and a limited number of final customers. This study shows that about 54% of small firms focus only on the Jepara market, whereas the other 46% also has markets outside the district. About 20% of small producers claim to have foreign buyers who irregularly order in small quantities.

Similar to L&M firms, the small producers' perception about access to designs and technology is higher than access to market information. Compared to the L&M firms, small firms do not have different access to designs and technology. The same tendency is found in access to market information. This is not surprising, as many small firms are subcontractors of the L&M firms nearby, and most of the contractors' quality control staff regularly visits their workshops. Like L&M firms, small firms in Jepara also rely on the designs given by buyers.

Access to inputs and services

The description of access to inputs and services is presented in Table 8.16.

Table 8.16 Comparing access to inputs and services between small and L&M firms in Jepara

		Access to (scale from 1: is very difficult to 5: very easy)			
		Skilled workers	Wood	Dry kilns	Finance
Small firms	Mean	3.77	3.02	3.40	3.53
	Std.	0.81	1.34	0.95	0.94
L&M firms	Mean	3.90	2.54	3.81	3.93
	Std	1.10	1.26	1.07	0.75

The first is access to skilled labor. Labor market pooling, especially for temporary workers, has facilitated small firms' access to skilled workers. The increase in unemployment at the national level has improved small firm accessibility, as many workers coming from outside Jepara have increased the worker pool. A firm's access to skilled workers is higher than its access to materials. Only a few firms have difficulties hiring skilled workers. Thus, similar to L&M firms, the access of small firms to skilled workers is also high.

The second is access to wood materials. Small firm producers perceive that their access to wood is higher than L&M producers. As of this survey, the industry has a shortage of wood; buying large quantities of wood is more difficult than buying small quantities. Several years ago, some contractors provided wood for their subcontractors, but now many contractors subcontract to small firms to solve the problem of a lack of available wood.

The third indicator is access to dry kilns. The access to dry kilns of small firms does not differ markedly from L&M firms, but this information may be misleading. Indeed, there are many rental dry kilns available, but numerous small firms still rely on the sun for wood drying. In contrast, the decline in wood quality in the market means that many buyers require small producers to process their products using dry kilns. Therefore, this perception should be considered with care.

The fourth indicator is access to financial services. Small producers perceive their access to financial services as high, even though it is lower than L&M firms. Many small producers claim to have no problems accessing credit, as there are many private moneylenders available, even though the interest rate is relatively high. Besides deposit systems that are commonly given by contractors or buyers, small firms that have difficulties in financing or getting payments from delayed checks can seek out a private moneylender to sell their delayed checks at a discount.

To summarize, small firm producers in Jepara are perceived to have good access in most aspects of location externalities. Compared to L&M firms, access is almost at the same level; the implication is that specialization is perceived to provide benefits for small firms in terms of access to market knowledge, inputs, and services. Small producers are perceived to have an even better access to wood than L&M firms.

8.7.2 Local network

Forward ties with local buyers

Although several small producers claim to have foreign buyers, this section focuses on cooperation with local buyers, as they are their largest regular buyers. This research

identified cooperation with local buyers as encompassing cooperation in product development, quality improvements, speed of delivery, and technological knowledge improvements. Full data is only available for cooperation in product development, quality improvements, and speed of delivery. Relative to cooperation, the highest is in quality improvements, which involves 88% of producers; speed of delivery involves 70% of producers. Compared to L&M scale firms, cooperation between small scale producers and buyers is higher, which is not surprising, as local buyers are the main buyers of small scale firms, whereas for most L&M firms, their main buyers are foreign.

Furthermore, small producers commonly receive support from their customers. This research identified various types of support received by small firms such as deposits, wood, accessories/supplies, borrowing machinery, and transportation of the product. However, full data is only available for support in terms of deposits which are commonly received by small producers (about 90%). Compared to the L&M scale firms, support received by small scale producers from their buyers is higher.

Backward ties

From the 100 small firms observed, about 36% produce fully in-house (see Table 8.17); hence, a majority of firms out-contract small or major parts of the production process. This research identified that cooperation with subcontractor includes product development, quality improvements, speed of delivery, and technological knowledge improvements. However, full data is only available for cooperation in quality improvements and speed of delivery. Compared with L&M firms, cooperation by small firms is less; this is understandable, as resources (which many small firms lack) are needed in order to cooperate. Furthermore, support in terms of deposits is frequently found in the subcontracting relationships of small firms, but compared with L&M firms, the support is less.

Table 8.17 Distribution of small firms on subcontractor status based on firm size (percentages)

	Types of production		Total	Subcontractor status of small firm	
	full in-house	involved subcontractors		Never acts as sub-contractor	Sometimes acts as sub-contractor
L&M	12.5	87.5	100	81.2	18.8
Small	36.0	64.0	100	9.0	91.0

Horizontal cooperation and joint action

In this study, the involvement of small producers in horizontal cooperation is very high. This is not surprising, as small firms are constrained by the lack of resources, and they overcome such limitations by cooperating with colleagues. This research identified various types of cooperation with other firms, such as exchange of information, joint material purchasing, joint orders, borrowing/ lending of machinery, and joint marketing. However, full data is only available for cooperation in information exchange (93% producers are involved), joint material purchasing (75%), and joint orders (65%).

In addition, with regard to multilateral joint action, joint action has historically been very important in the development of small firms in Jepara. Small firms are reluctant to get involved in formal associations, as they feel that formal associations are established for L&M firms. The study shows only 10% of producers are registered as members of a formal association. In contrast, about 67% of producers are members of informal associations such as self-help groups, rotating credit associations, etc. Compared to L&M sized firms, only a few small firms are involved in formal associations and only a few small firms are members of informal associations.

To summarize, cooperation between small firms with their local buyers is substantial. In addition to cooperation, most small firms also receive support from their local buyers. Compared to L&M firms, cooperation and support in relation to local buyers is high for small scale firms. In contrast, cooperation between small firms with subcontractors is lower compared to L&M firms. Horizontal cooperation also plays an important role as the involvement of small producers in a horizontal association is higher than for L&M firms. Compared to L&M firms, small producers prefer to be involved in bilateral cooperation rather than multilateral cooperation.

8.7.3 Competition

Most small producers (90%) perceive competition as high in Jepara, and that it has increased in the last few years (60%). Although many small firms have markets outside Jepara or even claim to have foreign buyers, 86% of producers point out that the source of strongest competitors comes from the district. This figure is somewhat puzzling, as qualitative interviews note that many small producers also perceive their neighbors as non-competitors. Compared to L&M scale firms, the pattern of perception about competition is no different; it suggests that firm location influences producer perceptions. Compared to

L&M scale firms, the pattern of perception about competition is no different; it suggests that firm location influences producer perceptions.

We can conclude that small firm producers perceive an increasing tension of competition in the region. Because they perceive that the source of competition comes from the district, no joint efforts are being made – for example, to identify the cause(s) of declining orders and seek new promising markets – to unravel the problem of competition.

8.7.4 Firm and entrepreneur characteristics

Several characteristics of small firm producers are presented in Table 8.18. Hardly any differences are found either in firm and entrepreneur age or experience between L&M and small firms. However, the educational level of small producers is lower than that of L&M firm entrepreneurs.

Table 8.18 The characteristics of L&M and small firm producers from the Jepara cluster

	L&M		Small	
	mean	std	mean	std
Firm age (year)	11.58	7.87	10.05	5.44
Entrepreneur age (year)	43.33	9.56	43.56	7.34
Entrepreneur education (scale 1 to 4)	3.10	0.76	2.59	0.87
Entrepreneur experience (scale 1 to 4)	2.87	1.11	2.98	1.23

8.7.5 Firm performance

The indicator used to measure the performance of small scale firms is sales per worker.The mean of SAW for small scale firms is 25.8, whereas standard deviation is 13.8. The productivity of small scale firms is about half that of L&M scale firms. The possible reasons for lower productivity are the older/substandard technologies which reduces production speed and yields lower quality products that affect the prices that small producers will receive. Interestingly, subcontractor firms have better performance than non-subcontractor firms.

8.8 Explaining small firm performance

In examining the impact of externalities on the performance of small scale firms, we only use the regression analysis and do not apply the structural equation model with AMOS. The reasons are, first, the number of cases from small scale firm surveys is relatively few, and so does not fulfill the requirements applied in this analysis. Second, the only dependent variable is SAW, whereas reliable data on ROS is difficult to obtain.

This section examines the impact of cluster factors and internal firm factors on the performance of small scale firms in the Jepara cluster and compares it with L&M firms from Jepara. For this purpose, we pool small and L&M firms and estimate regression models with a full set of intercept and slope dummies which allows us to empirically investigate the difference between small and L&M firms in the impact of the various explanatory variables on firm performance. The results from the regression analyses for the four groups of explanatory variables are presented in Table 8.19.

Table 8.19 Pooled regression results for L&M and small firms (dependent variable is: ln sales per worker)

		Base case (large firms)	Additional effect for small firms
I.1	**External economies**		
	Constant	2.81***	–0.84***
	Access to:		
	Buyer information	0.09	–0.09
	Design information	0.07	–0.11
	Technological information	–0.11	0.17***
	Wood	0.10***	–0.06**
	Skilled workers	0.02	–0.07
	Dry kilns	0.13***	–0.07
	Finance	0.05	–0.09
	R^2		0.86
	F-test		51.30
I.2	**Local cooperation**		
	Constant:	3.35***	–1.13***
	Cooperation with local buyers in:		
	Product developments	–0.07	0.17
	Quality improvements	0.07	–0.11
	Delivery	0.03	–0.14
	Down payments	0.09	0.24***
	Cooperation with subcontractors in:		
	Product developments	–0.05	0.11
	Quality improvements	0.16	–0.01
	Delivery	0.21***	0.01
	Down payments	0.21	–0.15
	Horizontal cooperation:		
	Information exchange	–0.03	0.01
	Material purchasing	0.01	0.07**
	R^2		0.86
	F-test		24.61
I.3	**Competition**		
	Constant:	2.83***	0.33
	Competition intensity	0.30***	–0.36***
	Origin of the strongest competitors	0.01	0.10
	Trend of competition	–0.06	0.08
	R^2		0.40
	F-test		1.35
II.1	**Firm/** Entrepreneur **characteristics**		
	Constant:	2.54***	–1.21***
	Firm age	0.00	–0.01
	Entrepreneur age	0.00	0.01
	Entrepreneur education	0.53***	–0.30***
	Entrepreneur experience	–0.02	0.26***
	R^2		0.73
	F-test		4.18

Note: the coefficients in the first column refer to L&M firms. The coefficients in the second column represent additional effects for small firms. So the constant for a small firm is equal to 2.81 – 0.84 = 1.97. Stars indicate again whether the coefficients are significantly different from zero. In the right column, this tests for whether there is a statistically-significant difference in the effect between large and small firms. In the middle columnm it tests whether the coefficients (which apply to the large firms) are significantly different from zero. Following the usual convention, three stars imply significance at 1%, two at 5%, and one at 10%.

The table above indicates several important findings. First, regarding external economies, access to raw materials and access to dry kilns are identified as having positive and significant effects on sales per worker for both firms. Meanwhile, it appears that the access to wood by small firms has significantly weaker impacts on firm performance than for L&M firms. The industry suffers from a shortage of raw materials, so accessibility to raw materials determines the ability of firms to fulfill buyer orders. Dry kilns are required in the production process to maintain the quality of materials, and the need for dry kilns is increasing due to the wood quality decline, since there is a shortage in the market. Currently, many international buyers even put processing using dry kilns as a requirement in the transaction. Compared to L&M firms, access to wood for small firms is relatively easier, as the quantity needed by small firms is lower. Therefore, in order to overcome the problem of wood availability, many L&M firms outsource to small firms. This strategy may arise another potential problem as many small firms used lower quality of wood from public forest lands, or utilize illegal wood. The other difference is the access to information technology, which is insignificant for L&M firms but shows positive and significant impact for small firms. Moreover, while many small firms have difficulty financing, in this study access to financial services does not significantly affect firm performance.

Next, for the local network, among the proposed indicators for local network factors, only two indicators (support deposits given by local buyers and cooperation with subcontractors in delivery improvements) have positive and significant effects on firm performance. Interestingly, horizontal cooperation does not have an effect on L&M firm performance, but our regression analysis shows that collaboration in the purchase of raw materials has a positive effect on small firm performance. The impact of local buyer support in terms of deposits is significantly higher for L&M than for small firms. Support given by buyers is important, as many small firms in Jepara have problems with financial resources. By accessing the support from local buyers, small firms can provide the products on time.

Third, from the three indicators of competition, the regression analysis indicated that none of these indicators has an effect on small firm performance, but for L&M firms competition is significant in determining firm performance.

Fourth, regarding firm and entrepreneur characteristics, among indicators proposed to determine firm performance, we found that education and experience play important roles but are different between small and L&M firms. The impact of education is higher in L&M

firms than in small firms, whereas experience is positive and high for small firms but insignificant for L&M firms.

For small scale firms, the results of testing the hypotheses are shown in Table 8.20.

Table 8.20 Results of hypotheses tests for small firms

	Hypotheses	Results
H-8.1	*External economies*	
H-8.1a	Access to information (technology) positively affects firm performance.	accepted
H-8.1b.	Access to inputs (wood) positively affects firm performance.	accepted
H-8.2	*Local cooperation*	
H-8.2a.	Cooperation with local buyers (support given by local buyers) positively affects firm performance.	accepted
H-8.2b.	Cooperation with subcontractors positively affects firm performance.	rejected
H-8.2c.	Horizontal cooperation positively affects firm performance.	accepted
H-8.3	Competition positively affects firm performance.	rejected
H-8.6	*Firm and entrepreneur characteristics*	
H-8.6a.	Firm age positively affects firm performance.	rejected
H-8.6b.	Entrepreneur age positively affects firm performance.	rejected
H-8.6c.	Entrepreneur education positively affects firm performance.	accepted
H-8.6d.	Entrepreneur experience positively affects firm performance.	accepted

To conclude, for small firms in Jepara, access to technological information, inputs in terms of wood, cooperation with buyers, horizontal cooperation, and entrepreneur education and experience determine firm performance. Compared to L&M firms, the impact of most cluster factors on small firm performance seems to be lower, but small firms enjoy more cluster factors than L&M firms. It is noteworthy that competition as another element of cluster factors has no effect on small firm performance but determines L&M firm performance. Both firms are affected by different degrees of entrepreneurial characteristics. For small firms, education has a lower impact on firm performance than the L&M firm performance, whereas experience has a positive impact on small firms but is insignificant for L&M firms.

8.9 Conclusion

From the regression analysis on L&M scale firms, the partial effects of access to inputs, cooperation with local buyers, cooperation with subcontractors, competition, cooperation with foreign buyers, asset specificity in relationships with foreign buyers, marketing promotions, marketing commitments, entrepreneur education, and entrepreneur language skills on firm performance are confirmed. Each of these indicators has positive and significant impacts on firm performance. Therefore, hypotheses H-8.1.b, H-8.2.a, H-8.2.b,

H-8.3, H-8.4.a, H-8.4.b, H-8.5b, H-8.6c, and H-8.6e are confirmed. These findings support Marshall's (1920) hypothesis about the advantages obtained by firms from the pooling of input markets due to clustering, Schmitz's (1999) argument about the advantages of firms from cooperating with local firms, Gereffi's (1999) argument about the benefits of linking to a global value chain, and Aaby and Slaters' (1989) findings on the advantages of having a proper marketing strategy and the benefits of having favorable entrepreneur characteristics. On the other hand, the effects of market/technological information, horizontal cooperation, firm age, entrepreneur age, and entrepreneurial experience on the construct of firm performance are not significant. Thus, hypotheses H-8.1.a, H-8.2.c, H-8.6.a, H-8.6.b, and H-8.6.d are not supported by the results, and particularly Marshall's hypothesis about firm benefits from knowledge spillovers and Schmitz's (1999) argument regarding firm advantages of horizontal cooperation in the cluster.

The evidence from the structural equation model (SEM) is not always comparable with the results from the regression analysis but they are not much different. This is caused by the fact that in the regression analysis we use only productivity to measure performance, while in the SEM-analysis, in addition to productivity, we also consider profitability, which is reflected by returns on sales. From the confirmatory factor analysis in SEM, most indicators that contribute to independent latent variables are statistically-significant indicators for explaining the construct of firm performance.

The integrated model affirms that external economies, the international network, marketing strategies, and entrepreneur characteristics determine L&M firm performance. Therefore, hypotheses H-8.1, H-8.4, H-8.5, and H-8.6 are supported by the SEM analysis, meaning that the analysis supports Marshall's (1920) hypothesis about the advantages of clustering, Gereffi's (1999) argument about the benefits of linking to a global value chain, and Aaby and Slaters' (1989) findings on the role of marketing strategy and firm/entrepreneur characteristics. Meanwhile, the effects of local cooperation and competition on firm performance are not confirmed. Thus, hypotheses H-8.2 and H-8.3 are not supported by the results, meaning that Schmitz's (1999) argument regarding firm advantages from local cooperation and Porter's (1998) argument on the benefits of competition are not supported by the analysis.

The regression analysis of small scale firms shows that access to information, access to inputs, cooperation with local buyers, cooperation with subcontractors, horizontal cooperation, and entrepreneur education and experience on firm performance are also confirmed. Each of the variables has positive and significant impacts on firm performance.

Hypotheses H-8.1.a, H-8.1.b, H-8.2.a, H-8.2.b, H-8.2.c, H-8.6.c, and H-8.6.d are supported. However, the effects of competition, firm age and entrepreneur age on firm performance are not confirmed, meaning that hypotheses H-8.2b, H-8.3, H-8.6.a, and H-8.6.b are not supported by the results. Compared to L&M firms, the benefits perceived to be enjoyed by small firm producers are different from those perceived to be enjoyed by L&M firms except in access to information, cooperation with local buyers, horizontal cooperation, and entrepreneur experience. Nonetheless, the impact of access to wood and entrepreneur education on firm performance is higher for L&M firms than for small firms, whereas access to technological information, support in terms of deposits, and entrepreneur experience are significant for small firms but not for L&M firms. Furthermore, the impact of competition is significant for L&M firms but insignificant for small firms.

Comparing the two types of analyses, the SEM analysis provides a clear answer to the contributions of external economies, the international network, marketing strategies, and entrepreneur characteristics on firm performance, whereas local cooperation and competition do not contribute to small firm performance. In fact, the application of confirmatory factor analysis eliminates all insignificant indicators that potentially contribute to firm performance. Although the regression analysis does not provide clear answers to each factor, it reveals all the indicators that potentially contribute to firm performance.

As discussed in the previous sections, the competitiveness of a firm is determined by internal firm factors, cluster factors, and international linkages. For L&M firms, the dominant factor of firm performance is linking to international buyers. Again, it should be noted that the relationships with foreign buyers is merely based on producer perception. International buyers have benefited local producers with GVC as far as the local buyers can produce the products according to the designs provided by international buyers. It can not be denied that transfer of technology/knowledge secured along the production processes and marketing of a product is guaranteed. The involvement of foreign buyers has resulted in the higher efficiency of production and marketing cost, and upgrading of firms, as it appear in the increasing quality of the product and variation. In the upgrading, global buyers may support or hinder the suppliers in upgrading, depending on whether they can benefit from it. They will support them when the upgrading strengthens their position but hinder them when it encroaches their position (Schmitz and Knorringa, 2000). The tendency of local firms to internalize the production process limits the upgrading to be diffused over the cluster.

Schmitz (1995) underlines that the clustering of firms increases competitiveness in the international market regardless of the size of the firms. By clustering, the theory assumes that firms are homogenous, in which the benefits enjoyed and the contributions given to the local externalities are proportional. In terms of knowledge spillover, firms incorporate the technological benefits from the cluster, while at the same time they also contribute to the development of the cluster. This assumption is not satisfactory as many firms in a cluster are not homogenous. From this study, we learn that the benefits enjoyed between L&M firms and small-scale firms are different. On the other hand, Shaver and Flyer (2000) argue that a cluster with heterogeneous firms is characterized by adverse selection. With different levels of technology, they confirm that knowledge spillover in a cluster increases the competitiveness of weak firms, but it is not so for the strong firms. Firms with the best technology, strong knowledge, and resources can contribute more to the cluster but will get fewer benefits from the cluster. Conversely, firms with weak technology, knowledge, and resources contribute less but will get more benefits from the cluster. Therefore, firms with strong technology, knowledge, and resources tend not to cluster, while firms with low technology tend to cluster.

This research has limitations. The survey was done for L&M scale firms in Jepara and three other clusters and small scale firms from one area. Thus, the results are generalized only to the scope of those areas. The sample is non-proportional, and respondent selection is based on a snowball sampling, thus limiting the possibilities for generalization. It would have been better to have the sampling taken randomly from the research areas. Moreover, the small scale firms sampled were selected only from Jepara firms. It would have been better if firms had been selected from other areas in order to make comparisons between the effects of the cluster on small scale firms inside and outside Jepara.

Participants in these surveys were firm owners or managers, since they usually had access to all pertinent information. A single key informant was also most appropriate, especially for small scale firms, since they did not have good administration. Using a single informant from an organization could cause the results to be biased (Premkumar and Ramamurthy, 1995); this is particularly valid if key informants faced unpleasant situations, such as declines in sales and profits. Therefore, in future research it is suggested that two key informants be involved from one medium or large organization, so that accurate comparisons can be made to determine inter-rater reliability.

When designing the questionnaires, the most practical way of answering the questions was developed, but it should be restated that most of the data reported here was based on

management perception. The varied perceptions may have played a role in the answers provided in the survey and influenced the findings. Although the survey instruments contained multiple items for each factor, many indicators were dropped during the confirmatory factor analysis, which caused several latent variables to be supported by only two indicators. Future research should attempt to develop additional scale items for latent variables.

Appendix 8A AMOS analysis

In the main text of this chapter, the AMOS analysis presented is a short cut in which some information and procedures are skipped. Appendices 8A.1 to 8A.5) provide some information that is eliminated from the main text, such as the abbreviations of indicators used in the model, measurements applied, details of the initial model, and the output of the confirmatory factor analysis. This section also supplements the AMOS analysis with the output of the Probit analysis that identifies whether determinants of firm performance are explained by some firms' / entrepreneur s' characteristics.

Appendix 8A.1. List of abbreviations

Below are the abbreviations of indicators used in the analysis in Chapter 8:

Acdk	access to dry kilns
Acfin	access to financial services
Acinb	access to information about buyers
acind	access to information about designs
acind	access to information about technology
Acrm	access to materials
Acskiw	access to skilled workers
Acsm	access to sawmills
Alobud	allocate budget for marketing
Alosta	allocate staff for handling marketing
Charf	characteristic factors
Comp	competition
Enage	entrepreneur age
enedu	entrepreneur education
enexp	entrepreneur experience
enski	entrepreneur English skills
exec	external economies
fage	firm age
fbbas1	foreign buyers' investment in their relationships with their producers
Fbbas2	foreign buyer cost of switching suppliers
fbcd	cooperation with foreign buyers in delivery speed up
fbcpd	cooperation with foreign buyers in product development
fbcq	cooperation with foreign buyers in quality improvement
fbpas1	producers' investment in their relationship with a particular foreign buyer
Fbpas2	producer cost in switching a foreign buyer
fbsdp	support given by foreign buyers in terms of down payments
hcinfo	horizontal cooperation in information exchange
hcmap	horizontal cooperation in material purchasing
hcord	horizontal cooperation in joint orders
innet	international network
lbcd	cooperation with local buyers in delivery speed up
lbcpd	cooperation with local buyers in product development
lbcq	cooperation with local buyers in quality improvements
lbsdp	support given by local buyers in terms of down payments
locop	local cooperation
mastra	marketing strategies
mweb	marketing using a website
ncomp	intensity of competition
orcomp	origin of the strongest competitors
pardex	participation in domestic exhibitions
ros	Return on sales

saw	Sales per worker
sccd	cooperation with subcontractors in delivery speed up
sccpd	cooperation with subcontractors in product development
sccq	cooperation with subcontractors in quality improvement
scsdp	support given to subcontractors in terms of down payments
tcomp	trend in competition
videx	visit domestic exhibitions
vifex	visit foreign exhibitions

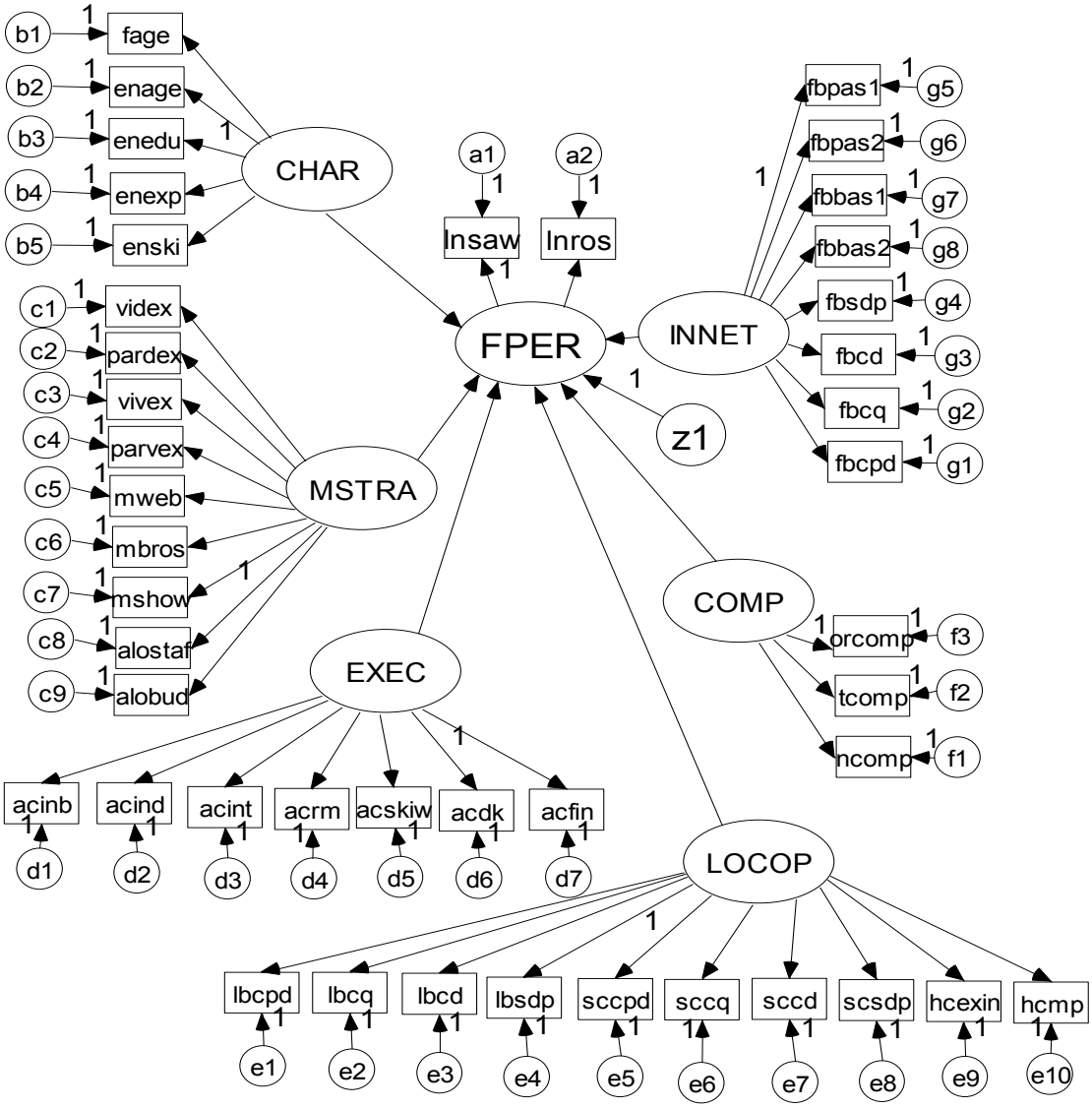
Appendix 8A.2. Independent variables, indicators and measurement

The latent variables that were used in the AMOS analysis consisted of several indicators. In order to capture less subjective data, we applied different measurements for each variable.

latent variables	details	indicators	measurement
External economies	Accessibility to information	Acinb Acind Acint	Score accessibility from (1) difficult to (5) easy
	Accessibility to inputs, and services	Acrm Acskiw Ackd Acfin	
Local cooperation	Cooperation with local buyers	Lbcpd Lbcp Lbcd Lbsdp	Cooperation intensity (0) never, (1) often, (2) very often.
	Cooperation with subcontractors	Sccpd Sccq Sccd Scsdp	
	Cooperation with competitors	Hcinfo Hcmap	
Competition	Competition intensity and trend	Ncomp Tcomp Orcomp	Score from (1) to (5)
International network.	Cooperation with foreign buyers	Fccpd Fccq Fccd Fcsdp	Cooperation intensity (0) never, (1) often, (2) very often.
	Asset specificity in foreign buyer	Fbpas1 Fbpas2 Fbbas1 Fbbas2	Score from (1) to (5)
Marketing strategies	Marketing activities	Videx Pardex Vifex Parfex Mweb Mbros Mshow	Marketing intensity (0) never, (1) often, (2) very often.
	Marketing commitment	Alobud Alostaf	
Firm and Entrepreneur characteristics	Firm characteristics	Fage	Year
	Entrepreneur characteristics	Enage	Year
		Enedu Enexp Enski	Score 1 to 4

Appendix 8A.3. A structural model

This appendix provides details of the initial model of firm performance, the impact of internal firm factors, cluster factors, and international network on firm performance, in which the general model is presented in Figure 8.3.



Appendix 8A.4. Measurement model: standardized parameter estimates

This appendix provides the output of the confirmatory factor analysis.

Indicator	Estimate	S.E.	C.R.
EXEC			
acfin	0.565	0.082	6.093
acrm	0.781	0.068	10.681
acskiw	0.861	0.079	11.956
acdk	0.844		
LOCOP			
lbcq	0.571	0.123	6.353
sccq	0.846	0.164	9.719
sccd	0.885	0.160	9.482
scsdp	0.689		
COMP			
ncomp	0.530	0.172	4.864
tcomp	0.901	0.246	2.349
orcom	0.508		
INNET			
fbcpd	0.702	0.088	7.955
fbcq	0.558	0.090	6.147
fbcd	0.560	0.090	6.289
fbpas1	0.749	0.147	8.432
Fbpas2	0.806	0.147	8.813
fbbas1	0.688	0.123	7.510
Fbbas2	0.738		
MSTRA			
videx	0.831	0.109	10.959
pardex	0.807	0.111	10.557
mweb	0.678	0.134	8.727
alostaf	0.669	0.090	8.580
alobud	0.850		
CHARF			
enedu	0.829	0.156	7.253
enexp	0.504	0.121	6.993
enski	0.752		
PERF			
lnsaw	0.758		
lnros	0.878		

Appendix 8B. Probit analysis of determinants of firm performance based on some firm characteristics

This appendix provides the results of the Probit analysis.

Determinants of Firm Performance	Firm age	Entrepreneur age	Entrepreneur education	Entrepreneur experience	Entrepreneur English skill	Export
1.1 External Economies						
Access to						
1. materials			(+)**	(+)**	(+)***	
2. skilled workers	(+)*		(+)***		(+)***	
3. dry kiln			(+)**		(+)***	(+)*
4. finance			(+)**		(+)**	(+)*
1.2 Local Cooperation						
Cooperation with local buyers						
1 quality improvement	(+)*			(+)**		
Cooperation with suppliers						
1 quality			(+)**	(+)*	(+)**	
2 delivery	(+)*		(+)**		(+)**	
3 deposits	(+)***				(+)***	(+)***
1.3 Competition						
1 number of competitors		(+)*		(+)*		(–)**
2 trend in competition		(+)*		(+)*		
3 origin of competitors				(+)*		(–)*
2 International Network						
Cooperation with foreign buyers and support						
1 product development	(+)*					
2 quality			(+)**		(+)*	(+)*
3 delivery	(+)*					(+)*
Asset specificity						
1producer investments	(+)*				(+)***	(+)**
2 producer switching costs			(+)**		(+)**	(+)**
3 perception of buyer investments					(+)***	(+)**
4 perception of buyer switching costs			(+)**		(+)**	(+)**
Internal firm factor						
Marketing Strategy						
1 attend domestic exhibition				(+)*		(+)*
2 participation domestic exhibition	(+)*		(+)**			
3 website			(+)**		(+)**	
4 allocate staff for marketing			(+)**		(+)**	(+)**
5 allocate budget for marketing			(+)*	(+)*	(+)***	(+)**

Appendix 8C. The questionnaire

This appendix contains the questionnaire used to collect data from L&M scale firm entrepreneurs and small scale firm entrepreneur.

For small scale firms, question no 1.6; 4.1 to 4.4; 6.3, 6.4; 6.12, 6.13; 9.1, 9.2; 10.1 to 10.5 are skipped.

1. Personal Data

1.1 Sex (1) Male (2) Female

1.2 Age_____years

1.3 Status of respondent at the enterprise:
(1) Owner (2) Manager (3) Other (specify) _____

1.4 Level of education
(1) Elementary school
(2) Secondary school
(3) High school
(4) Higher education
(5) Other (specify) _____

1.5 Work experience that is relevant to the current job?
(1) Has no work experience
(2) Worked at a non furniture firm
(3) Worked at a small furniture firm
(4) Worked at a large furniture firm
(5) Other (specify) _____

1.6 How well do you speak English?
(1) Do not understand English
(2) Understand English but not able to speak
(3) Understand and am able to speak English
(4) Understand English and am able to speak English fluently

2. Company data

2.1 Year of establishment _____

2.2 Ownership
(1) 100% owned by an Indonesian
(2) Equity cooperation with a foreigner (foreigner share ….%)
(3) 100% owned by a foreigner
(4) Other (specify) _____

2.3 Main product (…% of total output)
(1) ---------- ------
(2) ---------- ------
(3) ---------- ------

2.4 Type of raw material (1) Teak (2) Mahogany (3) Other (specify) _____

2.5 Type of activities done in-house and the trend in the last 5 years

	Production activity	% from total production	Trend in the last 5 years				
1	Raw material to unfinished furniture		(2)	(1)	(0)	(-1)	(-2)
2	Raw material to finished furniture		(2)	(1)	(0)	(-1)	(-2)
3	Only finishing and packaging		(2)	(1)	(0)	(-1)	(-2)
4	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

2.6 In the last 5 years, do you subcontract parts of the products?
(1) Yes
(2) No

2.7 If you subcontract parts of the products, what is the reason?
(You may choose more than one!)
(1) Orders are not regular
(2) Do not have specific machinery
(3) Cheaper and faster
(4) Other (specify) _____

2.8 In the last 5 years, do you also perform as a subcontractor for another firm?
(1) Yes
(2) No

2.9 If you are a subcontractor for another firm, what is the reason?
(You may choose more than one!)
(1) Continuation of an order
(2) Cheaper marketing costs
(3) Receive assistance from contractors
(4) Other (specify) _____

2.10 Use own design

Own design	% from total production	Trend over last 5 years				
% of products with own design	_____	(2)	(1)	(0)	(-1)	(-2)

3. Firm size

3.1 Number of workers and wages for each type of worker in 2004

Type of worker	Female		Male	
	Number	Average Wage	Number	Average Wage
Carver				
Carpenter				
Service worker				
Sander				
Finishing worker				
Other (specify) _____				

3.2 Number of unpaid family workers _____

3.3 The origin of most of the employees
(1) Most employees are from this cluster
(2) The number of employees is about the same from this cluster and outside the cluster
(3) Most of them are from outside the cluster

4. Export strategies

Level of exporting activities:
4.1 Does your company export?
(1) Has no export experience
(2) Has export experience but does not export anymore
(3) Exports via a mediator
(4) Exports but not on a regular basis
(5) Exports regularly

Motivation to Export:

4.2 How often do you do these following marketing activities?

	Types of marketing activities	(0) Never	(1) Sporadically	(2) Regularly
1	Attend domestic trade fairs			
2	Participate in domestic trade fairs			
3	Attend international trade fairs			
4	Participate in international trade fairs			
5	Have a showroom			
6	Have a website			
7	Have a billboard			
8	Distribute brochures and catalogs			
9	Other (specify) _____			

Export commitment:
4.3 How are your exporting activities handled?
(1) No special staff is allocated to handle the exporting activities
(2) There is a special local staff allocated to handle exports
(3) There is a foreigner that is assigned to handle exports

4.4 Do you allocate a certain amount of money to promote exporting activities?
(1) Not at all
(2) Yes, but not regularly
(3) Yes, regularly

5. External economies

5.1 How easy do you gain access to:

		Score accessibility from (1) difficult to (5) easy	Trend over last 5 years			
1	Raw materials	(2)	(1)	(0)	(-1)	(-2)
2	Skilled labor	(2)	(1)	(0)	(-1)	(-2)
	Knowledge about:					
3	- the current technology / production processes	(2)	(1)	(0)	(-1)	(-2)
4	- the current design trends	(2)	(1)	(0)	(-1)	(-2)
5	- buyers' information	(2)	(1)	(0)	(-1)	(-2)
	Machinery and equipment					
6	- kiln dry	(2)	(1)	(0)	(-1)	(-2)
7	- saw mill	(2)	(1)	(0)	(-1)	(-2)
	Supporting services from					
8	- a training center	(2)	(1)	(0)	(-1)	(-2)
9	- a technology center	(2)	(1)	(0)	(-1)	(-2)
10	- business development services	(2)	(1)	(0)	(-1)	(-2)
11	- a financial service	(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6. Joint action / inter firm cooperation

6.1 Number of subcontractors _____

6.2 Origin of most of the subcontractors

(1) Most subcontractors are from this cluster

(2) The number of subcontractors is about the same from this cluster and outside the cluster

(3) Most of the subcontractors are from outside the cluster

6.3 Number of foreign buyers _____

6.4 What kinds of foreign buyers do you have? _____

(1) Manufacturers

(2) Wholesalers

(3) Retailers

(4) Other (specify) _____

6.5 Number of domestic buyers _____

6.6 What kinds of domestic buyers do you have?

(1) Manufacturers

(2) Wholesalers

(3) Retailers

(4) Other (specify) _____

6.7 Do you cooperate with other local producers in your industry in the following ways?

	Type of cooperation	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Exchange of information and experience		(2)	(1)	(0)	(-1)	(-2)
2.	Lending machinery and tools		(2)	(1)	(0)	(-1)	(-2)
3.	Product development		(2)	(1)	(0)	(-1)	(-2)
4.	Joint marketing		(2)	(1)	(0)	(-1)	(-2)
5.	Joint orders		(2)	(1)	(0)	(-1)	(-2)
6.	Joint training of workers		(2)	(1)	(0)	(-1)	(-2)
7.	Purchase of input / raw materials		(2)	(1)	(0)	(-1)	(-2)
8.	Exchange ideas or discuss problems or strategies		(2)	(1)	(0)	(-1)	(-2)
9.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.8 Do you visit production sites of other local furniture firms?
(0) Never (1) Occasionally (2) Often

6.9 Do other entrepreneurs come and look around your factory/workshop?
(0) Never (1) Occasionally (2) Often

6.10 Do you cooperate with subcontractors in the following ways:

	Type of cooperation	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Product developments		(2)	(1)	(0)	(-1)	(-2)
2.	Quality improvements		(2)	(1)	(0)	(-1)	(-2)
3.	Speeding up delivery		(2)	(1)	(0)	(-1)	(-2)
4.	Technological upgrading		(2)	(1)	(0)	(-1)	(-2)
5.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.11 Do you provide any of the following support to your sub contractors?

	Type of support	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Deposits		(2)	(1)	(0)	(-1)	(-2)
2.	Raw materials		(2)	(1)	(0)	(-1)	(-2)
3.	Supplies or accessories		(2)	(1)	(0)	(-1)	(-2)
4.	Lending machinery and tools		(2)	(1)	(0)	(-1)	(-2)
5.	Repair/ maintenance of machines		(2)	(1)	(0)	(-1)	(-2)
6.	Training of workers		(2)	(1)	(0)	(-1)	(-2)
7.	Transport of parts or products		(2)	(1)	(0)	(-1)	(-2)
8.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.12 Do you cooperate with foreign buyers in the following ways:

	Type of cooperation	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Product developments		(2)	(1)	(0)	(-1)	(-2)
2.	Quality improvements		(2)	(1)	(0)	(-1)	(-2)
3.	Speeding up delivery		(2)	(1)	(0)	(-1)	(-2)
4.	Technological upgrading		(2)	(1)	(0)	(-1)	(-2)
5.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.13 Do your foreign buyers provide any of the following?

	Type of support	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Deposits		(2)	(1)	(0)	(-1)	(-2)
2.	Raw materials		(2)	(1)	(0)	(-1)	(-2)
3.	Supplies or accessories		(2)	(1)	(0)	(-1)	(-2)
4.	Lending machinery and tools		(2)	(1)	(0)	(-1)	(-2)
5.	Repair/ maintenance of machines		(2)	(1)	(0)	(-1)	(-2)
6.	Training of workers		(2)	(1)	(0)	(-1)	(-2)
7.	Transport of parts or products		(2)	(1)	(0)	(-1)	(-2)
8.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.14 Do you cooperate with local buyers in the following ways:

	Type of cooperation	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Product developments		(2)	(1)	(0)	(-1)	(-2)
2.	Quality improvements		(2)	(1)	(0)	(-1)	(-2)
3.	Speeding up delivery		(2)	(1)	(0)	(-1)	(-2)
4.	Technological upgrading		(2)	(1)	(0)	(-1)	(-2)
5.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

6.15 Do your local buyers provide any of the following?

	Type of support	(0) Never (1) Occasionally (2) Often	Trend over last 5 years				
1.	Advance payments		(2)	(1)	(0)	(-1)	(-2)
2.	Raw materials		(2)	(1)	(0)	(-1)	(-2)
3.	Lending machinery and tools		(2)	(1)	(0)	(-1)	(-2)
4.	Repair/maintenance of machines		(2)	(1)	(0)	(-1)	(-2)
5.	Training of workers		(2)	(1)	(0)	(-1)	(-2)
6.	Transport of parts or products		(2)	(1)	(0)	(-1)	(-2)
7.	Other (specify) _____		(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

7. Inter-firm competition and firm performance

7.1 Where are your main competitors located?

(0) In this cluster
(1) In other parts of the region
(2) Abroad

7.2 How many competitors do you have in this cluster?

(0) No competitor
(1) A small number
(2) A moderate number
(3) Many
(4) Too many

7.3 The dynamics of the competition

What is the intensity of competition in this cluster in the last 5 years?	(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

7.4 In order to out-compete your rivals, what are the three main factors (in order of importance)?

(1) Price
(2) Quality
(3) New Designs
(4) Speed and punctual delivery
(5) Others (specify) _____

7.5 Association memberships

Memberships in formal associations

(1) Asmindo
(2) ASEPTI
(3) Other (specify) _____

7.6 Memberships in informal associations

(1) Rotating credit association (ROSCA)
(2) Paguyuban
(3) Other (specify) _____

8. Firm Performance

	For 2004 (average)	Trend over last 5 years				
- The volume of export sales (monthly or other unit of time appropriate)		(2)	(1)	(0)	(-1)	(-2)
- Average price in US $ per unit of export sales		(2)	(1)	(0)	(-1)	(-2)
- Average cost of production per unit of export sales		(2)	(1)	(0)	(-1)	(-2)
- The volume of domestic sales (monthly or another unit of time appropriate)		(2)	(1)	(0)	(-1)	(-2)
- Average price in Rp per unit of domestic sales		(2)	(1)	(0)	(-1)	(-2)
- Average cost of production per unit of domestic sales		(2)	(1)	(0)	(-1)	(-2)

- Average monthly operational costs	(2)	(1)	(0)	(-1)	(-2)
- Profit (annually – counted by enumerator)	(2)	(1)	(0)	(-1)	(-2)
Number of workers					
- Male	(2)	(1)	(0)	(-1)	(-2)
- Female	(2)	(1)	(0)	(-1)	(-2)
Speed of delivery	(2)	(1)	(0)	(-1)	(-2)
Quality	(2)	(1)	(0)	(-1)	(-2)

Trend in the last 5 years (2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

9. Asset specificity

9.1 Producer asset specificity (strongly disagree1-5 strongly agree)

(1) Our firm has made significant investments that are specific to our relationship with this foreign buyer. [ ]

(2) Our firm products/technology are/is tailored to meet the requirements of this foreign buyer. [ ]

(3) It will be very costly for us to replace this foreign buyer. [ ]

9.2 Producer perception on foreign buyer asset specificity
(strongly disagree1-5 strongly agree)

(1) This buyer has made significant investments in having a relationship with us[ ]

(2) It will be very costly for the buyer to switch to another producer. [ ]

10. The structure of governance

10.1 How do you describe your relationship with your foreign buyers?

(1) No close relationship with foreign buyers

(2) Your products are basically standardized products which can easily be bought from someone else

(3) The foreign buyer specifies the characteristics of the products

(4) The foreign buyer sets the production processes to be followed

(5) The foreign buyer set the control mechanisms that should be followed by the producer

(6) The foreign buyer also sets the controls on the producer's suppliers (sub contractors)

10.2 Does your foreign buyer buy from other companies in this country? _____

10.3 How are your sales to foreign buyers compared to 5 years ago?

(2) increased a lot (1) increased a little (0) unchanged (-1) decreased a little (-2) decreased a lot

10.4 Do you expect that in the coming 5 years your sales to foreign buyers will increase or decrease? Why? _____

10.5 What aspects do you need to improve most over the coming 5 years? _____

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PART III

Conclusions

Chapter 9

Conclusions

9.1 Introduction

The critical role of small firms in developing countries, along with the increasing globalization has driven many researchers to seek ways in which these small firms, constrained by lack of resources, can take advantage of opportunities provided by the global market. Cluster theory scholars underline the importance of small firms for clustering, as it enhances competitive advantages (Schmitz, 1999). They tend to underscore the role of external actors in the upgrading of the firms that enable small firms to overcome their barriers (Gereffi, 1999). In this study, both issues are addressed by taking into account internal firm factors: marketing strategies (Zou and Stan, 1998) and firm and entrepreneur characteristics (Pett and Wolff, 2003). Firms in a cluster moreover enjoy benefits from their own development while they simultaneously contribute to the development of the whole cluster.

The objective of this study is to understand the role of the aforementioned factors (cluster factors, international network factors, and internal firm factors) that affect firm performance, and in particular, to analyze the role of these three factors in wood furniture firms in Central Java. Central Java is one of the largest contributors to Indonesian wood furniture exports and there are several noteworthy wood furniture clusters such as Jepara, Klaten, Sukoharjo, and Semarang City. Although these clusters differ in several characteristics, all are dominated by firms that have less than 100 workers, and the major portions of their products are exported. Indeed, Nadvi and Schmitz (1994) argue that small and medium firms in specialized clusters are able to compete successfully in the

international market together with other larger firms in the clusters. Moreover, they are buyer-driven whereby foreign buyers are essential to the dynamics of the cluster. Compared to the other three, Jepara is the largest in which foreign buyers play a particularly important role from the early development stage of the cluster onwards.

As a resource-based and labor-intensive industry, competition in the wood furniture industry has strengthened in the last decade due to the fact that many developing countries have entered the world market (Kaplinksy and Readman, 2002). In Central Java (Indonesia), many clusters are currently suffering a tendency towards decline in exports. Despite experiencing a national shortage of wood, competition from other countries is blamed for the causes. Being located in clusters with a prominent role of foreign buyers, the question arises as to whether cluster factors and international network factors still perform as strong bases for firms in the clusters to compete. For this purpose, research questions central to this research are formulated in Chapter 1.

> *What factors contribute to firm performance in small and medium scale enterprises in the wood furniture sector in Central Java? More specifically, what is the contribution of: (1) Internal firm factors, (2) Cluster externalities, and (3) International linkages on firm performance in the Central Java wood furniture clusters?*

This chapter provides a brief overview of this thesis (Section 9.2) and discusses the implications for theory and policy (Section 9.3). The end of this chapter discusses the limitations of this analysis and provides suggestions for further research.

9.2 Summary

Interest in small scale firms revived in the early 1980s in academic and policy circles resulting in the recognition of the role of small firms in employment creation (see Chapter 2). Although small firms are discussed intensively afterwards, there is no standard definition applied widely. Literature documents the use of term small and medium enterprises (SMEs) and small firms interchangeably. Being small in size, SMEs have specific characteristics that are both advantageous and disadvantageous. Small firms have advantages stemming from their flexibility which allows them to respond easily to changes in the market and the environment. Disadvantages are derived from (dis)economies of

scale, including scope, sequence, and experience that affect the transformation process from inputs to outputs, innovation, marketing, and management of risk.

For small firms, previous studies show many identifiable sources of competitiveness, but innovation has a special place in determining firm competitiveness and performance. Because small firms are constrained by their limited resources, innovations that rely on internal sources are very difficult to bring to fruition. However, collaboration with various partners offers possibilities for small firms to overcome their limitations. To maintain competitive advantages, small firms can cooperate in innovation with external partners such as suppliers, customers, and competitors, or with a third party such as consultants, professional associations, universities, other science partners, etc. Moreover, to be innovative, small firms can also link up to clusters or centers of cooperation.

Scholars believe that clustering small firms enhances firms' competitive advantages so that they can compete in international markets. The competitiveness of small firms derived from industrial clusters is discussed in Chapter 3. There are several different views regarding the sources of competitive advantages from industrial clusters, but they are alike; they differ only in the focus. All of the approaches view innovation as an important element to contribute to the competitive advantages of firms.

The contribution of a cluster to the competitive advantages of a firm is also shown by the improvements in the performance of firms within the cluster. However, the role of a cluster in innovation is also influenced by the stage in the life cycle of the industry. For a developing country cluster, innovation and upgrading are needed, as it leads to sustained growth which a cluster can maintain. While clusters in developing countries lack innovation capabilities, cooperation with large firms is seen to overcome small firms' resource constraints. Moreover, the location of large firms increases the intensity of knowledge transfer and the diffusion of innovation throughout the cluster. While the location of large firms is dynamic, the shift in the structure of the cluster or its trajectories provides various opportunities for them to enhance their innovative capabilities.

Although a cluster framework has advantages in explaining how to increase the competitive advantages of small firms, the framework is insufficient for several reasons. First, it focuses on the competitive advantages arising from operational effectiveness. According to Porter (1998), competitive advantages develop from operational effectiveness and also, importantly, from strategies. Although continuous innovation in operational effectiveness is necessary to maintain sustainability, a distinct strategic position is required. Second, cluster theory does not address external linkages, that is, established connections

with external traders or buyers (Weijland, 1999; Schmitz, 2001). Third, it does not discuss governance in the relationship with buyers, which enables them to respond to external challenges.

Small firms from developing countries can benefit from globalized world trade by entering foreign markets. The internationalization theory has been developed to explain the behavior of small firms but is not fully able to explain the behavior of small firms from developing countries when they encounter barriers; the two main barriers are production and marketing capabilities. Due to these conditions, linking to global value chains is a critical way for them to gain access to the market, particularly to developed countries' markets, and to allow opportunities for upgrading. Thus it improves small firms' ability to compete internationally.

According to the global value chain (GVC) model discussed in Chapter 4, the extent to which capabilities can be obtained depends on the form of governance in which the local firms are inserted. Among various forms of governance, the quasi-hierarchy provides the best opportunity for small firms to get these capabilities. This governance is found in global production networks. Products, processes, and logistic parameters followed by firm suppliers are formulated in this governance. However, being inserted into this network requires a certain level of endogenous capabilities and resources. Moreover, by being inserted into a GVC, firms are forced to provide products at lower prices. Nevertheless, global buyers rarely want to be involved in upgrading beyond production (such as upgrading in designs or marketing capabilities) that provides better value added, since these capabilities are their competence as intermediaries. Therefore, transferring these capabilities may threaten their position as intermediaries.

In addition, the GVC framework places greater emphasis on global links than on the internal development of a particular country. However, a drawback of this approach is its tendency to neglect the role of institutional frameworks and other forms of local governance that might influence the cluster's upgrading strategies. Furthermore, the global value chain approach does not focus on micro-level factors that contribute to growth.

In Chapter 5 we formulate an integrated framework developed from cluster and global value chain theories. The model considers relevant variables in each theory that are potentially important in explaining a firm's performance. This model is expected to pool the advantages of each theory, while simultaneously minimizing their limitations. In addition to the two theories, the integrated model takes into account competitive factors from a firm's internal sources including entrepreneur background, a firm's characteristics,

and marketing/exporting strategies. However, integrating several theories in one analytical framework is not without difficulties. By trying to accommodate the possible variables that may influence a firm's performance, the framework increases in complexity. Support for certain variables from one particular theory will not always coincide with other variables from other theories. Several hypotheses regarding the impact of cluster externalities, international linkages, and internal firm factors on firm performance are formulated and subsequently tested in Chapters 7 and 8.

As mentioned above, the Jepara cluster is the largest wood furniture cluster in Indonesia. To investigate the impact of the cluster factors, international linkage factors, and internal firm factors, an assessment is undertaken with firms from the Jepara cluster as the benchmark. In order to elaborate the context, Chapter 6 has provided an overview of the evolution of the Jepara wood furniture cluster. The driving factors for the emergence of the Jepara cluster are historical circumstances culminating in a large number of skilled artisans, availability of raw materials, and policies of the local authorities and national government. Jepara developed from a stagnant cluster into a dynamic one since the mid-1980s onward, due to its link to the international network. The role of foreign buyers together with the availability of specialized skilled workers, the extensive use of subcontracting to small scale firms, the availability of part-time workers, the role of the government, and the currency devaluation – combined with the socio-cultural factors – are identified as the driving factors in the development of this cluster as it transited from emergence to growth and maturity. Presently, however, using a life cycle approach, we observe that the Jepara cluster has entered a maturity stage and is tending towards decline, as indicated by the tendency to decline in exports, number of firms, and number of employed workers.

Jepara is described as developing from a basic agglomeration to a satellite form, evolving to a hub-and-spoke form, but lately the trajectory is tending towards the satellite form; this is because the number of large and medium (L&M) firms has declined, while no new L&M firms have been established. In addition to the trend towards international competition, location factors are likely to play an important role in determining the performance of Jepara firms that, ultimately, determine the cluster development.

Jepara is one among several wood furniture clusters in Central Java. The dynamics of firms in the clusters leads to the research questions of this study, which were answered in Chapters 7 and 8. Chapter 7 focused on the impact of externalities in general (cluster factors and international linkages), whereas Chapter 8 discussed the impact of externalities

using more detailed indicators, and also considering specific internal firm factors. Chapter 7 strived to answer the question: Do the clustering of specialized firms, the clustering of diverse firms, export activities, and foreign ownership determine firm performance? In Chapter 7, these questions were addressed using a production function framework explaining firm output as a function of employment energy use, locational factor, and position in the global economy. The results from L&M firms in Central Java confirm the major hypotheses: that sectoral clustering of L&M improves firm performance; and linking to international buyers by being involved in exporting and equity partnerships will increase firm performance. However, clustering of diverse firms in urban areas only has an effect when combined with a link to an international buyer. Meanwhile, the hypothesis that clustering of L&M specialized firms with small scale specialized firms increases firm performance is not supported by the analysis.

The longitudinal data from 1994 to 2003 portrays the life cycle of the wood furniture industry in Central Java in its growth stage before 2000 and shifting towards a maturity stage after 2000. The maturity stage is characterized by a decline in the number of L&M firms, number of workers, and real production value. Indeed, from 1994 to 2003 the productivity of firms grew steadily, increasing about 1% annually. However, the growing productivity was sensitive to changes in the exchange rate, as shown by a pronounced increase in the real production value during the period of the financial crisis (1998-1999), and when the Indonesian currency was devalued in 2001. When the quantity of a product is assumed to remain the same, this means that the increasing value is not supported by the high value added of a product, which is derived from upgrading. Meanwhile, the life cycle of the Jepara cluster also follows the life cycle of the industry. It shifted to the maturity stage after 2000 and in the present period has tended to decline. The maturity/decline stage is characterized by a decline in the number of L&M firms in the cluster, number of workers, and export value.

Chapter 8 explained in greater detail the role of externalities and internal firm factors on firm performance. Specifically, Chapter 8 aimed to answer the question: Do external economies, local cooperation, competition, the international linkage, marketing strategies, and firm and entrepreneur characteristics determine firm performance? For small scale firms, this chapter strived to discover if external economies, local cooperation, competition, and firm and entrepreneur characteristics determine firm performance. To examine the impact of cluster factors, international linkage factors, and internal firm factors on the performance of L&M firms, we used the regression analysis and structural

equation models. Whereas to investigate the impact of cluster factors and internal firm factors on the performance of small scale firms, a regression analysis was utilized. The study confirms the major hypotheses: that access to inputs, cooperation with local buyers and subcontractors, competition, cooperation with foreign buyers, marketing activities and marketing commitment, and entrepreneur characteristics influence the performance of the L&M firms. However, the hypotheses stating that access to information, horizontal cooperation, and firm age determine firm performance are not all supported by the analysis. Moreover, the simultaneous impact of those factors on firm performance using the structural equation model reveals that external economies, the international linkage, marketing strategies, and entrepreneur characteristics have an impact on firm performance, whereas local cooperation and competition are insignificant in determining firm performance. International linkage factors have a stronger effect on firm performance than external economy factors, but the international linkage has a strong correlation with external economies. In the Jepara cluster, factors that influence the performance of small scale firms slightly differ from L&M firms. For certain aspects, their effects on small scale firm performance are higher than for L&M firms; but for other aspects, the effects on L&M firms are higher than on small scale firms.

9.3 Main findings

In this section we formulate the main findings of the application of our integrated framework to the empirical data.[37] The integrated framework is a combination of three theories: The Internal Firm theory, Cluster theory, and the Global Value Chain (GVC) approach. The findings from the analysis in Chapters 7 and 8 are summarized in Tables 9.1 and 9.2.

[37] We examine data on wood furniture firms in Central Java, Indonesia by using three case studies. First, we have examined the case of Central Java L&M wood furniture firms, based on annual survey data from 1994 to 2003 (Chapter 7). Second, we have examined the case of L&M firms, based on our own survey from four wood furniture clusters (Chapter 8). Third, we have examined the case of small scale firms from the Jepara cluster based on our own survey, in a comparison with L&M firms from Jepara.

Table 9.1 The findings from L&M firms

	Variables	Sign	Statistical significance	Details
Ch 7	**Central Java Study**			
	Cluster factors			
	The clustering of L&M firms	positive	Significant	
	The clustering of small firms	negative	Insignificant	
	The clustering of diverse firms	positive	Significant	*Only if it is combined with an international network factor*
	International linkage factors			
	Export	positive	Significant	
	Foreigner ownership or partnership	positive	Significant	
Ch 8	**Four clusters study**			
(1)	*Regression model*			
	Cluster factors			
	External economies			
	-Access to information	negative	Insignificant	
	-Access to inputs and services	positive	Significant	
	Local cooperation			
	-Cooperation with local buyers	positive	Significant	
	-Cooperation with subcontractors	positive	Significant	
	-Horizontal cooperation	negative	Insignificant	
	Competition	positive	Significant	
	International linkages			
	-Cooperation with foreign buyers	positive	Significant	
	-Asset specificity	positive	Significant	
	Internal firm factors			
	Marketing strategies			
	- Marketing activities	positive	Significant	
	-Marketing commitment	positive	Significant	
	Characteristics			
	Firm age	positive	Insignificant	
	Entrepreneur age	positive	Insignificant	
	Entrepreneur education	positive	Significant	
	Entrepreneur experience	positive	Insignificant	
	Entrepreneur language skills	positive	Significant	
(2)	*AMOS model*			
	Cluster factors			
	-External economies	positive	Significant	
	-Local cooperation	positive	Insignificant	
	-Competition	positive	Insignificant	
	International linkage factors			
	-Cooperation and asset specificity	positive	Significant	
	Internal firm factors			
	-Marketing strategies	positive	Significant	
	-Entrepreneur characteristics	positive	Significant	

Table 9.2 The findings from Jepara small firms in a comparison with Jepara L&M firms

Ch 8	**Jepara cluster study**			
	Regression model	Sign	Statistical significance	Details
	Cluster factors			
	External economies			
	-Access to information	positive	Significant	*Insignificant for L&M firms*
	-Access to inputs and services	positive	Significant	*Small scale firms have lower effect*
	Local cooperation			
	-Cooperation with local buyers	positive	Significant	*Insignificant for L&M firms*
	-Cooperation with subcontractors	positive	Significant	*L&M firms have larger effect*
	-Horizontal cooperation	positive	Significant	*Insignificant for L&M firms*
	Competition	positive	Insignificant	*Significant for L&M firms*
	Internal firm factors			
	Firm age	positive	Insignificant	
	Entrepreneur age	positive	Insignificant	
	Entrepreneur education	positive	Significant	*Small scale firms have lower effect*
	Entrepreneur experience	positive	Significant	*Insignificant for L&M firms*

Note: Although the results regarding the impact of cluster factors from two different surveys are diverse, we rely more on the results based on the BPS data for three reasons. (1) BPS data are more objective, while our survey is subjective as it is based on producer perceptions. (2) BPS data cover 10 years while our own data covers only 1 year. (3) BPS data is collected based on standardized questionnaires, which are developed and improved over time, whereas our questionnaire has not yet been tested in other research projects.

We now turn to addressing the implications of our research results in view of the central research question formulated in Chapter 1.

We start with internal factors. We learn that the performance of wood furniture firms is strongly driven by internal firm factors. For L&M firms, the important elements of internal firm factors are entrepreneur characteristics and marketing strategy. Entrepreneur characteristics consist of entrepreneur formal education and English language skills, while marketing strategy consists of marketing activities and marketing commitment. For small firms, the relevant entrepreneur characteristics consist of formal education and work experience. Therefore, education is pivotal in contributing to the performance of wood furniture firms. Formal education influences entrepreneurial thinking by helping the entrepreneur decide whether to adopt innovations in their company in order to improve competitive advantages.

Coinciding with education are English language skills. The better the English language competence, the better firm performance will be. English language skills help entrepreneur

s of L&M firms to communicate with foreign buyers. Thus, better formal education levels and English language skills signify better firm performance. For small firms, formal education plays an important role in enhancing firm performance. In addition to formal education, we discovered that experience also influences small scale firm performance, in that the higher education levels and longer work experience of entrepreneurs, indicates better firm performance. However, it is noteworthy that this finding is only supported by empirical data from the Jepara cluster, since for the other clusters, we did not study small firms.

Marketing strategy as another variable of internal firm factors is applied by most L&M firms but most small firms do not have a marketing strategy. The result shows that the intensity of marketing strategy influences firm performance, in that the more intense the marketing strategy the better the firm performance. Marketing strategy is a way for the management to obtain information about customer needs and wants or to attract buyers. In other words; the marketing strategy is expected to stimulate sales and profit of L&M firms.

The results for cluster factors are somewhat ambiguous. The first case study as described in Chapter 7 shows that clustering of L&M specialized firms significantly influences firm performance, while clustering of small scale specialized firms has an insignificant impact. Meanwhile, clustering of diverse firms shows an insignificant impact on firm performance, but we find that it becomes stronger when it is combined with international network factors as shown by equation 7.

In the second case study in Chapter 8, based on the regression analysis, most of the indicators for cluster factors are found to significantly influence firm performance except for access to information and horizontal cooperation. However, when we apply the AMOS analysis, only external economies significantly influence firm performance, while local cooperation and competition are statistically insignificant. Meanwhile, the third case study shows the role of cluster factors significantly influences firm performance except for competition.

Third, we consider the international network factors. Both studies (case 1 and case 2) show that linkage to international networks substantially affects L&M wood furniture firm performance. Linkage to international network is a way for upgrading, as it becomes a conduit to foreign partners' knowledge and information.

9.4 Limitations and future research

This study consists of two data surveys; the first is taken from the BPS annual surveys, whereas the second is a survey conducted by the author of the present thesis. The second survey is intended to study firms in-depth. Unfortunately, the two surveys are separate, since no specific firm information from the first can be used to select respondents in the second survey. It would be better if the sample for the in-depth survey could be designed based on information derived from annual surveys.

The previous studies show that proximity of firms provides many benefits for firms inside the cluster. Meanwhile, this longitudinal study reveals that clustering of small scale specialized firms does not contribute to L&M firm performance. As the findings from this research do not support previous studies, this needs to be further investigated.

The cluster theory argues that agglomeration externalities contribute to firm performance. The cross sectional study on L&M firms from 4 clusters done in 1995 shows that the impact of agglomeration externalities does not strongly affect firm performance, as it is exceeded by the impact of the international network. Meanwhile, the descriptive statistics from the longitudinal study tended to decline in the second half of the period of the study; which shows the different life cycle dynamics of the industry. Scholars such as Glaeser et al. (1992) and Henderson et al. (1995) have hypothesized that an established industry might have different needs regarding knowledge than an infant industry. They believe that the benefits of agglomeration externalities on industry growth vary according to their cycle. Therefore, this research needs to be replicated for other industries such as garment, textile, footwear, ceramic, and other technologically-advanced industries.

The cluster theory stresses the important factor of knowledge spillovers in contributing to the competitive advantages of the firms. In this study, for L&M firms, knowledge spillovers do not affect firm performance. In other words, in a high-density cluster, small scale firms enjoy the spillovers but L&M firms do not; this phenomenon needs to be investigated further, as well as what makes the difference and whether the learning system plays a role in determining this difference.

The research conducted here shows a decline in the shares of Jepara and other Central Java wood furniture clusters in the international market, in a period of continuous growth of world demand. The Kaplinsky and Readman (2002) study on selected Asian countries reveals that substantial growth was attained during the 1990–1995 period, but the export growth rate declined considerably between 1995 and 1999. They indicate that the impact of devaluation due to the Asian financial crisis that occurred from 1997 to 1998 is not

relevant in explaining the decline in the export growth rate. According to Kaplinsky and Readman, the decrease in export growth rate occurred in almost all countries, which suggests there are changes in structural factors in the world market of wood furniture that might relate to the changes in buyer preferences, sourcing decisions, or the saturation of the market. Since the implications of these changes may affect the development strategies in Jepara, other changes in Central Java wood furniture clusters and Indonesian wood furniture in general needs to be explored further.

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Samenvatting (Summary in Dutch)

Sinds het begin van de jaren tachtig van de vorige eeuw is er in zowel academische als beleidskringen een hernieuwde interesse waarneembaar in de betekenis van het midden- en kleinbedrijf (MKB) voor de creatie van werkgelegenheid. Enerzijds hebben kleinere bedrijven voordelen in de vorm van relatief grote flexibiliteit die hen in staat stelt snel te reageren op veranderingen in de markt en de directe omgeving van het bedrijf. Mogelijk nadelige effecten van een beperkte omvang komen voort uit het niet kunnen benutten van allerlei schaalvoordelen, het gebrek aan *scope* en de veelal beperkte ervaring.

Eerdere studies hebben het belang aangetoond van verschillende bronnen van concurrentiekracht (of het gebrek daaraan) van kleine bedrijven. Het innovatief vermogen staat daarbij vaak centraal. Door de beperkte hoeveelheid aan middelen waarover kleine bedrijven in de meeste gevallen beschikken is het lastig om 'eigen' innovaties voort te brengen. Samenwerking met andere partners biedt mogelijkheden om aan dit gebrek aan intern innovatief vermogen het hoofd te bieden. Zo kunnen kleine bedrijven samenwerken met externe partners zoals toeleveranciers, afnemers en concurrenten, of met derden zoals consultants, brancheverenigingen, universiteiten en andere partners. Bovendien kunnen kleine bedrijven zich aansluiten bij een cluster van gelijksoortige bedrijven.

Onder verschillende wetenschappers leeft de overtuiging dat clustering van kleine bedrijven de concurrentiekracht dusdanig kan versterken dat de bedrijven in staat zijn om effectief te concurreren op internationale markten. De bijdrage van clustering aan de concurrentiekracht van een bedrijf wordt veelal afgemeten aan de productiviteit van ondernemingen binnen het cluster. Daarbij dient in acht genomen te worden dat de betekenis van clustering voor het innovatief vermogen onder andere wordt beïnvloed door de fase van de levenscyclus waarin de bedrijfstak zich bevindt en locale omstandigheden. Zo vertonen clusters van uitsluitend kleine bedrijven in ontwikkelingslanden vaak een gebrek aan innovatief vermogen, terwijl clusters waarin enkele grotere bedrijven aanwezig zijn juist wel goed blijken te functioneren.

Hoewel de clustertheorie nuttige inzichten verschaft voor de verklaring van de groei van de concurrentiekracht van kleine bedrijven, kent de theorie haar beperkingen. Ten eerste spitst de theorie zich toe op concurrentievoordelen die voortkomen uit operationele effectiviteit.

Het belang van strategie blijft daarbij onderbelicht. Hoewel voortdurende innovatie in de operationele effectiviteit vereist is voor een duurzame ontwikkeling is een onderscheidende strategische positie noodzakelijk. Ten tweede houdt de clustertheorie slechts in beperkte mate rekening met de externe omgeving in de vorm van bijvoorbeeld bestaande relaties tussen externe handelaren of kopers. Ten derde is er weinig aandacht voor de mogelijkheid van sturing van de relatie tussen kleine bedrijven en externe partners die bedrijven in staat stelt om te reageren op externe schokken.

Kleine bedrijven in ontwikkelingslanden kunnen profiteren van de toenemende globalisering en de daarmee gepaard gaande mogelijkheden voor toetreding tot buitenlandse markten. Daarbij is het van belang te erkennen dat dergelijke bedrijven vaak worden geconfronteerd met talloze barrières zoals gebrek aan productie- en marketingcapaciteiten. Door te concurreren op de wereldmarkt zouden deze bedrijven aansluiting moeten krijgen tot *global value chains* (GVC). Deze bieden de kleine bedrijven toegang tot markten van ontwikkelde landen wat kan leiden tot *upgrading* van productieprocessen. De mate waarin de capaciteiten van kleine bedrijven verbeterd kunnen worden hangt af van de sturingsvorm binnen de waardeketen waar de kleine bedrijven deel van uitmaken. Van de verschillende sturingsvormen verschaft een quasi-hiërarchische de beste mogelijkheden voor kleine bedrijven om de genoemde capaciteiten te verkrijgen. Deze vorm van sturing komt veel voor in globale productienetwerken. Om deel uit te kunnen maken van een dergelijk type netwerk is een zeker niveau van basiscapaciteiten en middelen vereist. Bovendien zijn bedrijven uit ontwikkelingslanden vaak gedwongen om producten aan te bieden tegen lagere prijzen. Mondiaal opererende afnemers zijn bovendien zelden bereid om bij te dragen aan *upgrading* van andere activiteiten dan productie (zoals design en marketing). Hoewel de internationale verbanden voor kleine bedrijven in ontwikkelingslanden evident van belang zijn, wordt in bovenstaande benadering de rol van institutionele netwerken en andere vormen van lokale sturing vaak onderbelicht en is er relatief weinig aandacht voor bedrijfsspecifieke factoren.

In het licht van de bovengenoemde theoretische benaderingen die inzicht verschaffen in het functioneren van kleine bedrijven in clusters in ontwikkelingslanden wordt in dit proefschrift een geïntegreerd raamwerk van analyse ontwikkeld. Dit raamwerk beschrijft de relevante variabelen die bij kunnen dragen aan het verklaren van het presteren van individuele bedrijven. Het combineert de sterke kanten van de verschillende theoretische

benaderingen. Naast de genoemde theoretische benaderingen incorporeert het geïntegreerde model interne bedrijfsfactoren, zoals ondernemingsachtergrond, bedrijfskenmerken en marketing- en exportstrategieën. Op basis van dit raamwerk wordt vervolgens een aantal te onderzoeken hypothesen geformuleerd met betrekking tot het effect van cluster-externaliteiten, internationale relaties en interne bedrijfsfactoren op bedrijfsprestaties die in het vervolg van het proefschrift met micro-economische data worden onderzocht.

Om het effect van cluster-externaliteiten, internationale relaties en interne bedrijfsfactoren te onderzoeken, is in het kader van dit proefschrift een studie uitgevoerd onder bedrijven die zijn gevestigd in een cluster in Jepara. Dit Jepara cluster is het grootste meubelcluster van Indonesië. Het kenmerkt zich door de aanwezigheid van een groot aantal ambachtelijke meubelmakers en ruime beschikbaarheid van grondstoffen, ondersteund door zowel lokaal als nationaal beleid. De drijvende krachten achter de ontwikkeling van het Jepara cluster zijn de rol van de buitenlandse afnemers, gecombineerd met een gespecialiseerde beroepsbevolking, uitgebreide toepassing van uitbesteding van werkzaamheden aan kleine bedrijven, beschikbaarheid van deeltijdwerknemers, een stimulerende rol van de regering en een daling van de waarde van de Indonesische munt. Dit gecombineerd met sociaal-culturele factoren heeft ertoe geleid dat het cluster zich heeft ontwikkeld vanuit een introductiefase via een groeifase naar een volwassenheidsfase waarin het cluster zich momenteel bevindt. De ontwikkeling van het Jepara cluster over de tijd kan worden gekarakteriseerd als die van een kernagglomeratie die geleidelijk aan is getransformeerd in de vorm van een satelliet om uiteindelijk de vorm van een *hub-and-spoke* cluster aan te nemen. Recente ontwikkelingen doen vermoeden dat het Jepara cluster dreigt terug te vallen: de export daalt en het aantal bedrijven en werknemers neemt af. Daarmee lijkt het cluster ook weer meer een satellietvorm aan te nemen, waarbij met name het aantal grote en middelgrote bedrijven is afgenomen.

Naast het Jepara cluster bestaan er nog enkele meubelclusters op Centraal Java. De dynamiek van bedrijven in de clusters heeft tot twee centrale onderzoeksvragen geleid. De eerste richt zich op het effect van externaliteiten (clusterfactoren en internationale relaties), terwijl de tweede de nadruk legt op meer gedetailleerde indicatoren en specifieke interne bedrijfsfactoren.

Om te beginnen trachten we antwoord te vinden op de volgende vraag: In welke mate bepalen de clustering van bedrijven, activiteiten op internationale markten en buitenlandse betrokkenheid bij het bedrijf het presteren van bedrijven? Door een productiefunctie te schatten, waarbij productie wordt verklaard als een functie van het aantal werknemers, energieverbruik, locatiefactoren en de positie van het cluster in de wereldeconomie, trachten we de genoemde vraag te beantwoorden. De resultaten betreffende grote en middelgrote bedrijven bevestigen de belangrijkste hypotheses: sectorale clustering van grote en middelgrote bedrijven in met name stedelijke gebieden stimuleert het presteren van bedrijven, evenals overeenkomsten met internationale afnemers. Longitudinale data van 1994 tot en met 2003 tonen de verandering van de positie in de levenscyclus van de meubelindustrie in Centraal Java: voor 2000 bevond de bedrijfstak zich nog in de groeifase om daarna in de volwassenheidsfase terecht te komen. De afname van het aantal grote en middelgrote bedrijven, de daling van het aantal werknemers en de reële productiewaardedaling, karakteriseren de volwassenheidsfase. De periode 1994-2003 kenmerkt zich door een jaarlijkse stabiele groei van de productiviteit met 1 %. Echter, de productiviteitsgroei bleek gevoelig te zijn voor verandering in de wisselkoers, zoals tijdens de financiële crisis (1998-1999) en de devaluatie van de Roepia in 2001. Dit betekent dat de groei niet het resultaat is van een hogere toegevoegde waarde als gevolg van *upgrading*. De levenscyclus van het Jepara-cluster vertoont hetzelfde verloop als de levenscyclus van de industrie in zijn geheel op Centraal Java: na 2000 bevond deze zich ook in de volwassenheidsfase.

De tweede analyse in dit proefschrift verklaart meer in detail de invloed van externaliteiten en interne bedrijfsfactoren op het presteren van bedrijven. Meer in het bijzonder wordt ingegaan op de mate waarin externaliteiten, lokale samenwerking, concurrentie, internationale verbindingen, marketingstrategieën, en bedrijfs- en ondernemerskarakteristieken de prestaties van een bedrijf beïnvloeden. Voor kleine bedrijven geldt dat we proberen na te gaan of externaliteiten, lokale samenwerking, concurrentie en bedrijfs- en ondernemerskarakteristieken het presteren van een bedrijf bepalen. Om het effect van clusterfactoren, internationale verbindingen, en interne bedrijfsfactoren op het presteren van grote en middelgrote bedrijven te achterhalen, hebben we een regressieanalyse en enkele structurele evenwichtsmodellen gebruikt. Om het effect van clusterfactoren en interne bedrijfsfactoren op de bedrijfsprestaties van kleine bedrijven te onderzoeken hebben we een regressieanalyse toegepast. De studie bevestigt de belangrijkste hypotheses:

toegang tot ‘inputs’, samenwerking met lokale afnemers, concurrentie en samenwerking met buitenlandse afnemers, marketingactiviteiten, en ondernemerseigenschappen beïnvloeden het presteren van grote en middelgrote bedrijven. Voor de hypothese dat toegang tot informatie, horizontale samenwerking en leeftijd van het bedrijf de bedrijfsprestaties beïnvloeden wordt geen bevestiging gevonden. Het toegepaste structurele vergelijkingenmodel laat zien dat er een duidelijke invloed van externaliteiten, internationale verbindingen, marketingstrategieën en ondernemerskenmerken op bedrijfsprestaties is, terwijl er geen statistische aanwijzingen zijn voor effecten van lokale samenwerking en concurrentie. Verder blijkt dat internationale verbindingen een groter effect hebben op het presteren dan externaliteiten. Uiteindelijk komen we tot de conclusie dat er binnen het Jepara cluster een duidelijk verschil is tussen de factoren die de prestaties van kleine bedrijven en grote- en middelgrote bedrijven beïnvloeden. Sommige aspecten sorteren meer effect ten aanzien van kleine bedrijven, terwijl andere aspecten meer opgeld doen bij grote en middelgrote bedrijven.

Saripati (Summary in Indonesian Language)

Kinerja perusahaan (khususnya perusahaan kecil dan menengah) tidak hanya ditentukan oleh faktor internal perusahaan tetapi juga oleh factor external dimana usaha itu berada ataupun kerjasamanya dengan perusahaan internasional. Thesis ini mempelajari faktor-faktor apa yang mempengaruhi kinerja usaha menengah dan kecil pada sektor mebel kayu di Jawa Tengah. Secara khusus masalah yang diteliti adalah: apa sumbangan faktor internal dan faktor externalities terhadap kinerja usaha kecil maupun menengah mebel kayu di beberapa klaster di Jawa Tengah.

Minat terhadap sektor usaha skala kecil dan menengah telah muncul tahun 1980an pada kelompok akademisi dan pengambil kebijakan yang menekankan pada pengakuan tentang peran usaha kecil dalam penciptaan lapangan kerja. Meskipun usaha kecil kemudian banyak didiskusikan, tidak ada difinisi standard yang diterapkan secara meluas. Literature menggunakan istilah “usaha kecil dan menengah” dan “usaha kecil” secara sendiri-sendiri maupun bergantian. Menjadi usaha dengan ukuran kecil memiliki karakteristik khas yang menguntungkan sekaligus merugikan. Keunggulannya terletak pada fleksibilitas yang memungkinkan mereka mudah menyesuaikan diri terhadap perubahan baik di pasar maupun lingkungan usaha. Kerugiannya adalah skala kecil tidak ekonomis, termasuk jika kecil dalam *scope*, *sequence*, dan *experience* yang berdampak pada proses transformasi input menjadi output melalui inovasi, marketing, maupun manajemen risiko.

Pada usaha kecil, studi terdahulu mengidentifikasi sumber-sumber daya saing dan kinerja. Karena usaha kecil terkendala oleh sumber daya yang terbatas, inovasi yang mengandalkan sumber daya internal menjadi sesuatu yang sulit dilakukan. Namun kerjasama dengan berbagai partner memungkinkan usaha kecil mampu mengatasi keterbatasan mereka. Untuk menjaga keunggulan kompetitif, usaha kecil dapat bekerjasama dalam inovasi dengan partner luar seperti pemasok, pembeli dan pesaing, atau dengan pihak ketiga seperti konsultan, asosiasi professional, universitas, maupun partner ilmiah lainnya. Lebih dari pada itu agar menjadi inovatif usaha kecil dapat juga bertaut pada klaster atau pusat-pusat kerjasama.

Para ahli percaya dengan lokasi usaha yang mengelompok, usaha kecil dapat meningkatkan keunggulan kompetitif sehingga mereka mampu bersaing di pasar

internasional. Daya saing usaha kecil diturunkan dari klaster dimana mereka berada. Terdapat beberapa pandangan yang berbeda mengenai sumber daya saing yang berasal dari klaster industri, namun pada dasarnya semua bertumpu pada faktor yang sama hanya berbeda focus. Semua pendekatan tersebut menganggap inovasi sebagai elemen penting yang menyumbang keunggulan kompetitif suatu perusahaan.

Sumbangan klaster terhadap keunggulan kompetitif suatu perusahaan nampak dari peningkatan kinerja perusahaan dalam klaster. Namun peran klaster dalam inovasi dipengaruhi oleh tahapan siklus hidup dari industri. Untuk klaster di negara berkembang, inovasi dan upgrading dibutuhkan karena hal tersebut mempengaruhi kesinambungan pertumbuhan yang harus dijaga. Sementara klaster di Negara-negara berkembang kurang memiliki kapabilitas inovasi, kerjasama dengan perusahaan besar nampaknya bisa mengatasi kendala usaha kecil. Lebih jauh, lokasi usaha besar meningkatkan intensitas transfer pengetahuan dan penyebaran inovasi dalam klaster. Sementara lokasi usaha besar dinamis, pergeseran dalam struktur klaster atau lintasannya (trajectory) memberi berbagai peluang bagi usaha kecil untuk meningkatkan kemampuan inovasi.

Kerangka pikir bahwa klaster memiliki keunggulan dalam menjelaskan bagaimana peningkatan daya saing usaha kecil tidak memadai karena beberapa alasan. Pertama, kerangka ini memusatkan perhatian pada keunggulan kompetitif yang muncul dari efektivitas operasional. Menurut Porter (1998), keunggulan kompetitif selain berkembang dari efektivitas operasional, juga tak kalah pentingnya adalah strategi. Meskipun inovasi yang terus menerus dalam efektifitas operasional dibutuhkan untuk menjaga kesinambungan, suatu posisi strategik yang berbeda diperlukan. Kedua, teori klaster tidak membahas tautan eksternal, yaitu ketertautan pada pedagang atau pembeli external (Weijland, 1999; Schmitz, 2001). Ketiga, pendekatan ini tidak membicarakan governance dalam hubungannya dengan buyer, yang memungkinkan daya tanggap terhadap tantangan eksternal.

Usaha kecil di negara berkembang dapat memperoleh manfaat dari globalisasi perdagangan dengan memasuki pasar internasional. Teori internasionalisasi yang dikembangkan untuk menjelaskan prilaku usaha kecil ternyata tidak sepenuhnya mampu menjelaskan perilaku usaha kecil di negara berkembang ketika mereka menghadapi dua penghalang memasuki pasar internasional yaitu, kemampuan produksi dan marketing.

Kedua kondisi ini, bertautan pada rantai nilai global (GVC) merupakan cara penting memperoleh akses ke pasar internasional khususnya ke negara maju, yang sekaligus memberi peluang upgrading, sehingga kemampuan usaha kecil meningkat secara internasional.

Menurut model rantai nilai global, sejauh mana kapabilitas dapat diperoleh tergantung pada bentuk governance dimana perusahan local itu bertaut. Dari berbagai bentuk governance, quasi hierarchi memberi peluang yang paling besar memperoleh kapabilitas ini. Governance ini terdapat pada jejaring produksi global. Parameter produk, proses dan logistic diikuti perusahaan pemasok dirumuskan dalam governance. Namun bertaut pada jejaring ini membutuhkan *endogenous capabilities* pada tingkat tertentu dan sumber daya. Lebih dari pada itu, dengan bertaut pada rantai nilai global, perusahaan dipaksa untuk menyediakan produk. Pembeli global sebagai mata rantai utama jarang mau terlibat dalam upgrading desain atau marketing, yaitu kegiatan yang memberi nilai tambah tinggi, karena kemampuan ini menjadi kompetensi dari intermediaries. Alasan utamanya adalah, peningkatan kapabilitas perusahaan kecil ini dapat mengancam posisi mereka sebagai perantara.

Sebagai tambahan, kerangka rantai nilai global (GVC) memberi penekanan lebih pada tautan global dari perkembangan internal pada suatu Negara. Patut dicatat kekurangan dari pendekatan ini adalah tendensi mengabaikan peran institusi dan bentuk lain dari governance local yang mungkin mempengaruhi strategi upgrading klaster. Selanjutnya, pendekatan GVC tidak menfokuskan pada factor-faktor tingkat mikro yang berdaya sumbang pada pertumbuhan.

Dari uraian diatas, kami merumuskan suatu kerangka pendekatan teori klaster dan teori GVC. Model ini mempertimbangkan variable relevan dari kedua teori yang secara potensial penting untuk menjelaskan kinerja perusahaan. Model ini diharapkan menyatukan keunggulan teori tersebut, namun sekaligus meminimalkan keterbatasannya. Pada kedua teori, model terintegrasi memperhitungkan faktor-faktor kompetitif dari sumber-sumber internal termasuk latar belakang entrepreneur, karakteristik perusahaan dan strategi marketing atau export. Patut dicatat bahwa penyatuan beberapa teori kedalam satu kerangka analisis bukan tanpa kesulitan. Dengan mencoba mengakomodasi variable-variable yang mungkin mempengaruhi kinerja perusahaan meningkatkan komplexitas dari

kerangka piker ini. Dukungan dari variable tertentu terhadap teori tertentu tidak selalu cocok dengan variable lain dari teori lain. Beberapa hipotesa berkenaan dengan dampak externalitas klaster, tautan dengan firm internasional, dan factor internal firm diformulasikan untuk kemudian diuji.

Klaster Jepara adalah klaster mebel kayu di Indonesia. Penelitian tentang dampak faktor klaster, factor tautan pada perusahaan internasional, dan factor internal perusahaan, dilakukan dengan menilai kinerja perusahaan dengan perusahaan di klaster Jepara sebagai benchmark. Untuk meng-elaborasi context penelitian, disajikan overview dari mebel kayu Jepara. Faktor pendorong munculnya klaster Jepara adalah peristiwa historis yang berpuncak pada ketersediaan bahan baku, kebijakan otoritas local dan pemerintah pusat. Peran pembeli asing bersama dengan ketersediaan tenaga kerja spesialis, penggunaan system sub kontrak ke usaha kecil, ketersediaan tenaga kerja paruh waktu, peran pemerintah, dan devaluasi mata uang – yang dikombinasikan dengan faktor sosial budaya – diidentifikasi sebagai faktor pendorong pengembangan klaster seperti yang nampak ketika klaster mulai muncul, bertumbuh dan memasuki tahap kematangan (maturity). Pendekatan siklus hidup menunjukkan bahwa klaster Jepara telah memasuki tahap pendewasaan dan cenderung menuju penurunan, seperti diindikasikan oleh tendensi penurunan dalam export, jumlah perusahaan dan jumlah pekerja.

Jepara adalah satu diantara beberapa klaster di Propinsi Jawa Tengah, yang berkembang dari bentuk aglomerasi dasar ke bentuk satelit, dimana jumlah perusahaan menengah dan besar menurun, sementara tidak muncul perusahaan baru dalam skala ini yang didirikan. Selain tren persaingan internasional, faktor lokasi memainkan peranan penting dalam menentukan kinerja perusahaan di Jepara, yang akhirnya menentukan perkembangan klaster. Dinamika perusahaan dalam klaster mengarahkan pada dua pokok analisis utama yaitu, pertama dampak externalitas (faktor klaster dan faktor tautan internasional) secara umum dan faktor internal perusahaan, kedua mendiskusikan dampak eksternalitas dengan menggunakan indikator yang lebih rinci, dan mempertimbangkan faktor internal perusahaan secara khusus. Pokok perhatian pertama diarahkan untuk menjawab pertanyaan, apakah mengelompoknya perusahaan sejenis, mengelompoknya perusahaan yang berbeda, aktivitas export dan kepemilikan asing menentukan kinerja perusahaan? Pertanyaan ini dijawab dengan menggunakan kerangka fungsi produksi yang menjelaskan output perusahaan sebagai fungsi dari penggunaan tenaga kerja, penggunaan energi, factor

lokasi, dan posisi dalam ekonomi global. Hasil analisis terhadap usaha menengah dan besar di Jawa Tengah menguatkan hipotesa utama: pengelompokan secara sektoral perusahaan menengah dan besar dengan sesama perusahaan dalam skala yang sama meningkatkan kinerja perusahaan; selain itu bertaut pada pembeli internasional dalam kegiatan eksport dan berpartner dalam kepemilikan meningkatkan kinierja perusahaan. Namun pengelompokkan dengan usaha yang berbeda di daerah perkotaan hanya berdampak pada kinerja perusahaan jika dikombinasikan dengan ketertautannya pada pembeli internasional. Hipotesa kedua, bahwa pengelompokan perusahaan sejenis skala menengah dan besar dengan mengelompoknya perusahaan skala kecil yang sejenis tidak didukung hasil analisis.

Data th 1994 ke 2003 menggambarkan siklus hidup industri mebel kayu di Propinsi Jawa Tengah dan pertumbuhannya sebelum tahun 2000, bergerak menuju tahap kematangan sesudah tahun 2000. Tahap kematangan ditandai dengan penurunan jumlah perusahaan menengah besar, jumlah tenaga kerja dan nilai produksi secara riil. Memang dari tahun 1994 ke 2003 produktivitas sensitive terhadap nilai tukar, nampak dari peningkatan yang mencolok dalam nilai produksi selama periode krisis moneter (1998-1999), dan tahun 2001 ketika mata uang mengalami devaluasi ringan. Jika jumlah produk diasumsikan sama, itu berarti bahwa peningkatan nilai tambah atas produk tidak merupakan hasil dari proses upgrading. Sementara itu, siklus hidup klaster Jepara juga mengikuti siklus hidup industri. Jepara bergerak ke tahap pendewasaan sesudah tahun 2000 dan kemudian cenderung menurun. Tahap pendewasaan ditandai oleh penurunan jumlah usaha menengah besar di klaster, jumlah tenaga kerja, dan nilai eksport.

Pokok analisis kedua menjelaskan secara rinci dampak eksternalitas dan faktor internal perusahaan pada kinerja perusahaan. Secara khusus, dibutuhkan jawaban atas pertanyaan apakah *external economies*, kerjasama lokal, persaingan dan tautan internasional, strategi permasaran, karakteristik perusahaan dan entrepreneur menentukan kinerja perusahaan. Pertanyaan kepada usaha kecil ditekankan pada apakah faktor klaster dan factor internal perusahaan menentukan kinerja perusahaan. Dampak faktor klaster, faktor tautan internasional, dan faktor internal perusahaan pada perusahaan menengah dan besar, dianalisis dengan analisis regresi dan model persamaan struktural. Sementara untuk meneliti dampak faktor klaster dan faktor internal pada usaha kecil, digunakan analisis regresi. Hasil studi membenarkan rumusan hipotesa bahwa akses ke input, kerja sama dengan pembeli local, dan kerjasama dengan sub kontraktor, persaingan, kerjasama dengan

pembeli asing, aktivitas dan komitmen marketing, serta karakteristik pengusaha mempengaruhi kinerja usaha menengah dan besar. Namun hipotesa yang menyatakan bahwa akses informasi, kerjsasama horizontal, dan usia perusahaan dan pengusaha tidak didukung oleh hasil analisis. Lebih lanjut, dampak factor –faktor tersebut secara simultan terhadap kinerja perusahaan dengan model SEM memperlihatkan bahwa ekternal economies, tautan internasional, strategi marketing, dan karakteristik entrepreneur berdampak pada kinerja perusahaan secara khusus, sedangkan kerjasama dan persaingan tidak signifikan terhadap kinerja perusahaan. Tautan internasional berdampak kuat pada kinerja.

Faktor yang mempengaruhi kinerja perusahaan sedikit berbeda di Jepara, diantara usaha menengah dan besar dengan usaha kecil. Hasil studi ini menunjukkan bahwa dampak dari akses informasi teknologi, uang muka, pembelian bahan baku bersama, dan pengalaman pengusaha, punya dampak terhadap kinerja usaha kecil lebih tinggi dari usaha menengah dan besar. Sebaliknya efek dari akses ke bahan baku kayu, dry kiln, delivery, intensitas persaingan, dan pendidikan pengusaha terhadap kinerja usaha menengah dan besar lebih tinggi dari pada usaha kecil.

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